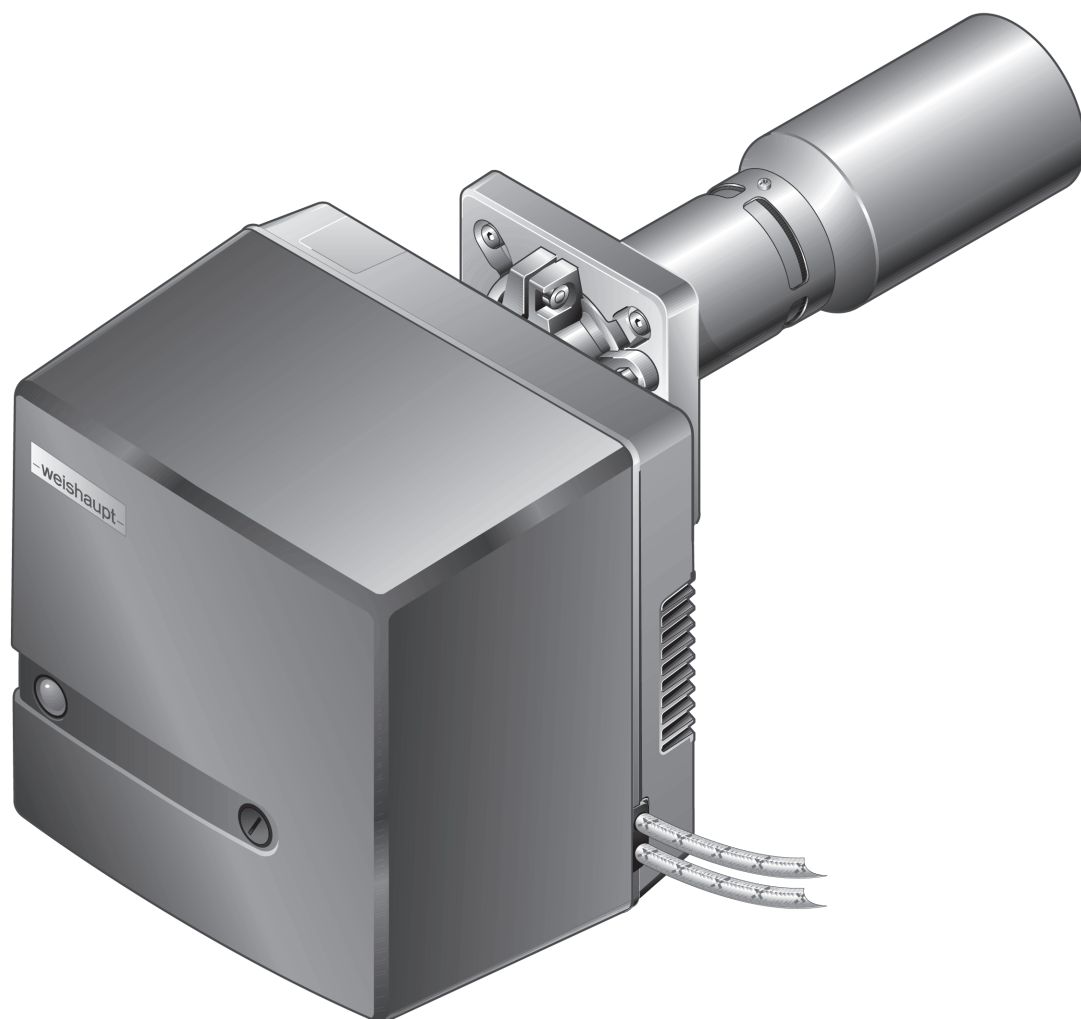


–weishaupt–

manual

Installation and operating instruction



Oil burner WL5-PB-H purflam®

83242002 • 1/2019-03

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1 User instructions

Translation of original
operating instructions

1 User instructions

This manual forms part of the equipment and must be kept on site.

Carefully read the manual prior to working on the unit.

1.1 Target group

The manual is intended for the operator and qualified personnel. They should be observed by all personnel working with the unit.

Work on the unit must only be carried out by personnel who have the relevant training and instruction.

Persons with limited physical, sensory or mental capabilities may only work on the unit if they are supervised or have been trained by an authorised person.

Children must not play with the unit.

1.2 Symbols

 DANGER	Immediate danger with high risk. Non observance can lead to serious injury or death.
 WARNING	Danger with medium risk. Non observance can lead to environmental damage, serious injury or death.
 CAUTION	Danger with low risk. Non observance can cause damage to the equipment and injury to personnel.
	Important information
	Requires direct action
	Result after an action
	Itemisation
	Range of values

1.3 Guarantee and Liability

Guarantee and liability claims for personal and equipment damage are excluded, if they can be attributed to one or more of the following causes:

- non approved application,
- non-observance of the manual,
- operation with faulty safety equipment,
- continual operation despite a fault,
- improper installation, commissioning, operation and service,
- repairs, which have been carried out incorrectly,
- the use of non original Weishaupt parts,
- force majeure,
- unauthorised modifications made to the unit,
- the installation of additional components, which have not been tested with the unit,
- the installation of combustion chamber inserts, which impede full flame formation,
- unsuitable fuels,
- defects in the inlet lines.

2 Safety

2.1 Designated application

The burner is suitable for operation on heat exchangers to EN 303 and EN 267.

If the burner is not used on combustion chambers to EN 303 and EN 267, a safety assessment of combustion and flame stability during individual process conditions and of the shutdown limits of the combustion plant has to be carried out and documented.

The combustion air must be free from aggressive compounds (e.g. Halogens). If the combustion air in the boiler room is contaminated, increased cleaning and servicing will be required. In this case ducted air intake is recommended.

The burner should only be used in enclosed rooms.

Improper use could:

- endanger the health and safety of the user or third parties,
- cause damage to the unit or other material assets.

2.2 Safety measures

Safety relevant fault conditions must be eliminated immediately.

Components, which show increased wear and tear or whose design lifespan is or will be exceeded prior to the next service should be replaced as a precaution.

The design lifespan of the components is listed in the service plan [ch. 9.2].

2.2.1 Normal operation

- All labels on the unit must be kept in a legible condition.
- Stipulated settings, service and inspection work should be carried out at regular intervals.
- Only operate the unit with its cover closed.

2.2.2 Electrical connection

For work carried out on live components:

- Observe the accident prevention instructions DGUV Regulation 3 and adhere to local directives,
- tools in accordance with EN 60900 should be used.

2.3 Electrical work

2.4 Alterations to the construction of the equipment

All conversions require written approval from Max Weishaupt GmbH.

- No additional components may be fitted, which have not been tested for use with the equipment.
- Do not use combustion chamber inserts, which hinder flame burnout.
- Use only original Weishaupt replacement parts.

2.5 Noise emission

The noise emissions are determined by the acoustic behaviour of all components fitted to the combustion system.

Prolonged exposure to high noise levels can lead to loss of hearing. Provide operating personnel with protective equipment.

Noise emissions can further be reduced with a sound attenuator.

2.6 Disposal

Dispose of all materials and components in a safe and environmentally friendly way at an authorised location. Observe local regulations.

3 Product description

3 Product description

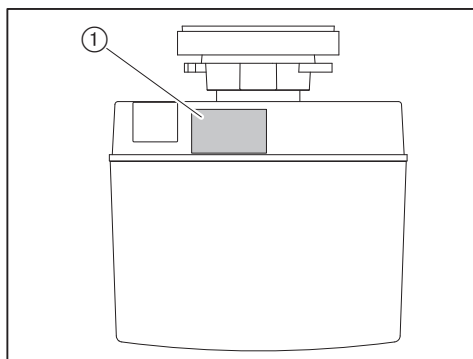
3.1 Type key

Example WL5-PB-H 1.19

W	Type: W burner
L	Fuel: Oil EL
5	Size
P	Burner type: purflam (Blue flame burner)
B	Construction
H	Version: Nozzle assembly with oil preheating
1.	Mixing head size
19	Air nozzle size

3.2 Serial number

The serial number on the name plate identifies the product. This is required by Weishaupt's customer service department.



① Name plate

Ser.No. _____

3 Product description

3.3 Function

3.3.1 Air supply

Fan with variable speed drive

The fan supplies the air from the air inlet via the intake connection to the mixing head. The fan speed is set using a potentiometer. This matches the air quantity to the mixing pressure required for combustion.

Air damper with nozzle solenoid (optional)

When the fan starts, the nozzle solenoid opens the air damper. At burner shutdown the air damper closes automatically. At burner shutdown the air dampers close automatically.

Air pressure switch

The air pressure switch monitors the fan pressure. If the fan pressure is insufficient, the combustion manager initiates a lockout.

An additional air pressure switch is not required for ducted air intake.

3.3.2 Oil supply

Oil pump

The pump draws the oil through the supply line and carries it under pressure to the oil nozzle. The pressure regulating valve keeps the oil pressure constant.

A solenoid valve opens and closes the oil supply to the nozzle. The pressure regulating valve and solenoid valve are integrated into the pump.

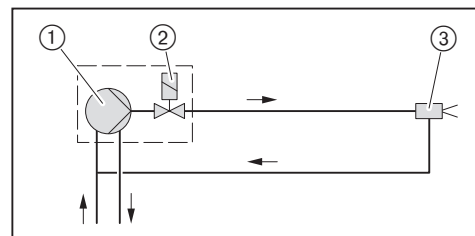
Nozzle head with nozzle shut off

The nozzle shut off is integrated in the nozzle head. It prevents oil leaks after shutdown.

Heat exchanger

The heat exchanger in the nozzle assembly heats the oil. At an oil temperature of approx. 45 °C the temperature switch releases the burner start.

Sequence diagram



- ① Oil pump on burner
- ② Solenoid valve on the oil pump
- ③ Nozzle head with nozzle shut off and nozzle

3.3.3 Electrical components

Combustion Manager

The combustion manager W-FM is the control unit of the burner.
It controls the sequence of operation and monitors the flame.

Pump motor

The pump motor drives the oil pump.

Ignition unit

The electronic ignition unit creates a spark at the electrode, which ignites the fuel/air mixture.

Flame sensor

The combustion manager monitors the flame signal via the flame sensor.
If the flame signal becomes too weak, the combustion manager carries out a controlled shutdown.

3 Product description

3.3.4 Program sequence

Oil preheating

At heat demand and after the initialisation time (T_i) has elapsed, the heat exchanger heats the oil in the nozzle assembly (T_H).

The temperature switch closes at a temperature of approx. 45 °C.

Pre-purge

The pump motor and the fan start. The fan runs at 95 % of the operating speed (T_z). The burner is now in the pre-purge (T_v) and pre-ignition phase (T_{vz}).

Ignition

The air pressure switch is activated during the pre-purge phase (T_v).

Ignition starts.

Fuel release

Following the pre-purge time (T_v) the solenoid valve (K11) opens and releases the fuel.

Safety time

With fuel release, safety time (T_s) and post-ignition time (T_{nz}) start.

The flame signal must be present within the safety time (T_s).

Ignition is switched off once the post-ignition phase (T_{nz}) has elapsed.

Operation

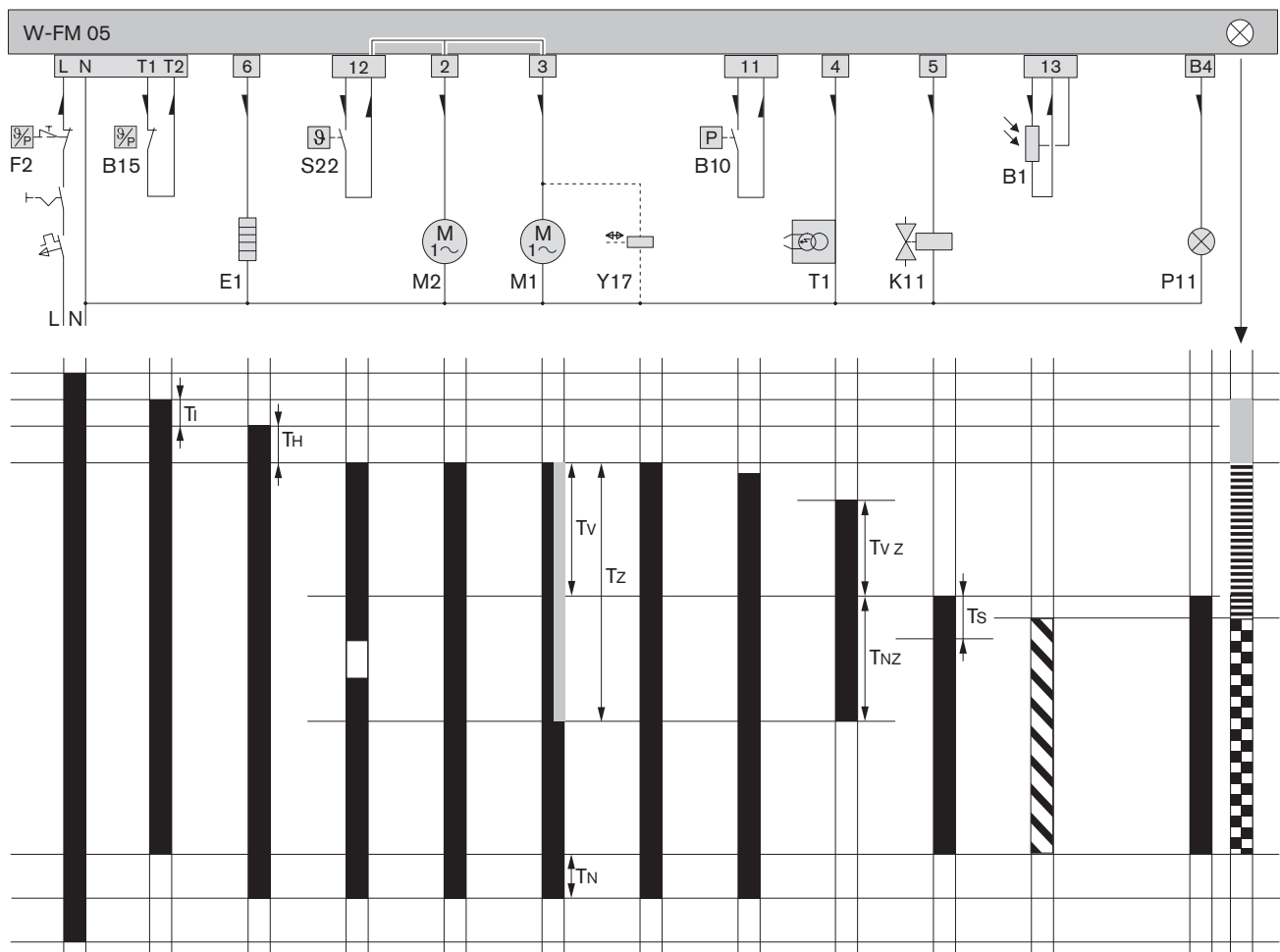
The combustion manager monitors the flame signal via the flame sensor.

Post-purge

If there is no longer a heat demand, the solenoid valve (K11) closes and stops the fuel supply.

Post-purge time (T_N) begins.

Following the post-purge phase (T_N) the fan switches off.



B1 Flame sensor
B10 Air pressure switch
B15 Temperature or pressure regulator
E1 Heat exchanger
F2 Temperature or pressure limiter
K11 Solenoid valve
M1 Fan
M2 Pump motor

P11 Control lamp operation (optional)
S22 Temperature switch
T1 Ignition unit
Y17 Air damper actuation (optional)

TH Heating time heat exchanger
Ti Initialisation time: 1 s
TN Post-purge time: 1.2 s
TNZ Post-purge time: 15 s
TS Safety time: 4.6 s
Tv Pre-purge time: 16 s
Tvz Pre-ignition time: approx. 15 s
Tz During this time the motor operates at 95 % operating speed.

■ Voltage is applied
▨ Flame signal present
→ Current path
■ START (orange)
▨▨▨▨▨▨ Ignition phase (flashing orange)
▨▨▨▨▨▨ Burner operation (green)

3 Product description

3.4 Technical data

3.4.1 Approval data

DIN CERTCO	5G936
Basic standards	EN 267:2011 Additional standards, see EU conformity certification.

3.4.2 Electrical data

Mains voltage / mains frequency	230 V/50 Hz
Consumption at start	max 231 W
Consumption during operation	max 181 W
Power consumption	max 1.1 A
Internal unit fuse	T6.3H, IEC 127-2/5
External fuse	max 16 AB

3.4.3 Ambient conditions

Temperature in operation	–10 ⁽¹⁾ ... +40 °C
Temperature during transport / storage	–20 ... +70 °C
relative humidity	max 80 %, no dew point

⁽¹⁾ with the relevant suitable fuel oil and layout of oil supply.

3.4.4 Fuels

- Fuel oil EL to DIN 51603-1
- Fuel oil EL A Bio 10 to DIN 51603-6
- Fuel oil EL to ÖNORM-C1109 (Austria)
- Fuel oil EL to SN 181 160-2 (Switzerland)

3.4.5 Emissions

Flue gas

To EN 267 the burner complies with emission class 3.

The NO_x values are influenced by:

- combustion chamber dimensions
- flue gas system
- fuel
- combustion air (temperature and humidity)
- medium temperature

Sound levels

Dual number noise emission values

	WL5-PB-H 1.19	WL5-PB-H 1.21	WL5-PB-H 1.22	WL5-PB-H 1.23	WL5-PB-H 1.24
Measured sound power level L _{WA} (re 1 pW)	57 dB(A) ⁽¹⁾	57 dB(A) ⁽¹⁾	58 dB(A) ⁽¹⁾	58 dB(A) ⁽¹⁾	59 dB(A) ⁽¹⁾
Uncertainty value K _{WA}	4 dB(A)	4 dB(A)	4 dB(A)	4 dB(A)	4 dB(A)
Measured sound pressure level L _{pA} (re 20 µPa)	51 dB(A) ⁽²⁾	51 dB(A) ⁽²⁾	52 dB(A) ⁽²⁾	52 dB(A) ⁽²⁾	53 dB(A) ⁽²⁾
Uncertainty value K _{pA}	4 dB(A)	4 dB(A)	4 dB(A)	4 dB(A)	4 dB(A)
	WL5-PB-H 2.24	WL5-PB-H 2.25			
Measured sound power level L _{WA} (re 1 pW)	59 dB(A) ⁽¹⁾	59 dB(A) ⁽¹⁾			
Uncertainty value K _{WA}	4 dB(A)	4 dB(A)			
Measured sound pressure level L _{pA} (re 20 µPa)	54 dB(A) ⁽²⁾	54 dB(A) ⁽²⁾			
Uncertainty value K _{pA}	4 dB(A)	4 dB(A)			

⁽¹⁾ Determined to ISO 9614-2.

⁽²⁾ Determined at 1 metre distance from the front of the burner.

The measured noise levels plus uncertainty values form the upper limit value, which could occur when measuring.

3 Product description

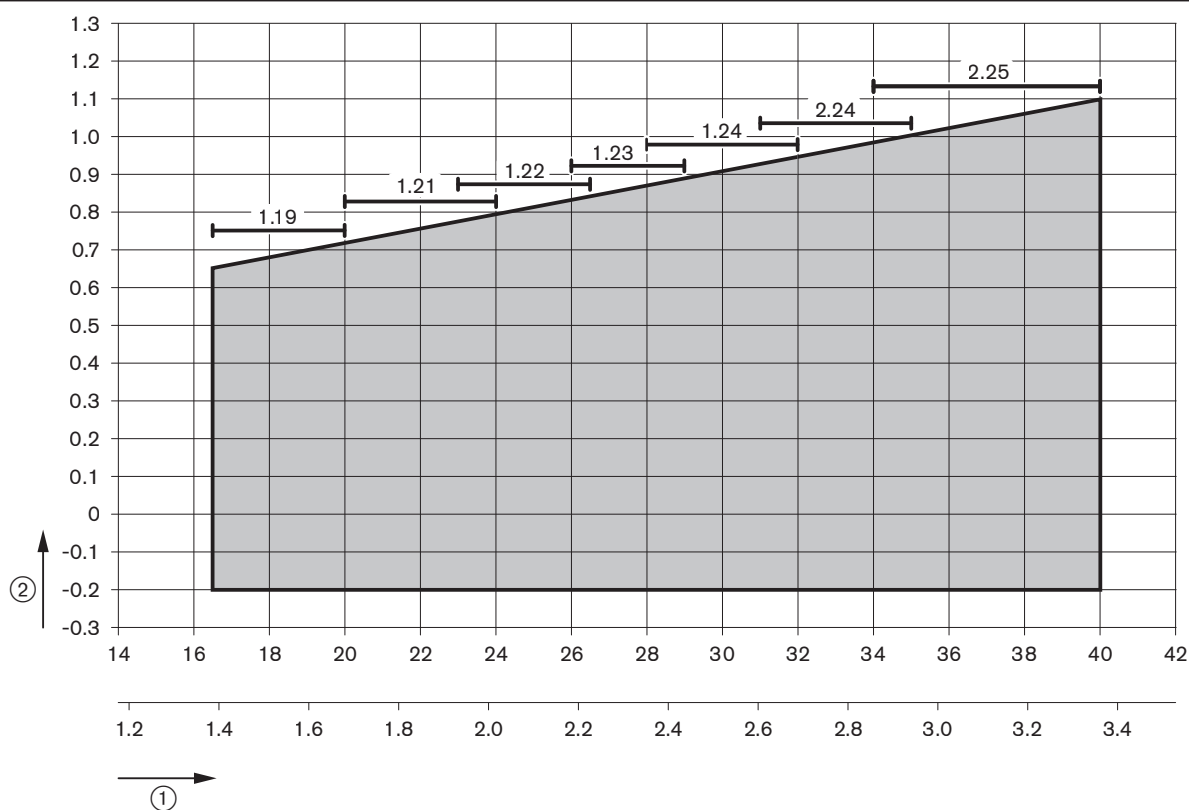
3.4.6 Rating

Combustion heat rating

The ratings range depends on:

- Size of mixing head (1. or 2.)
- Diameter of air nozzle (19 ... 25 mm)

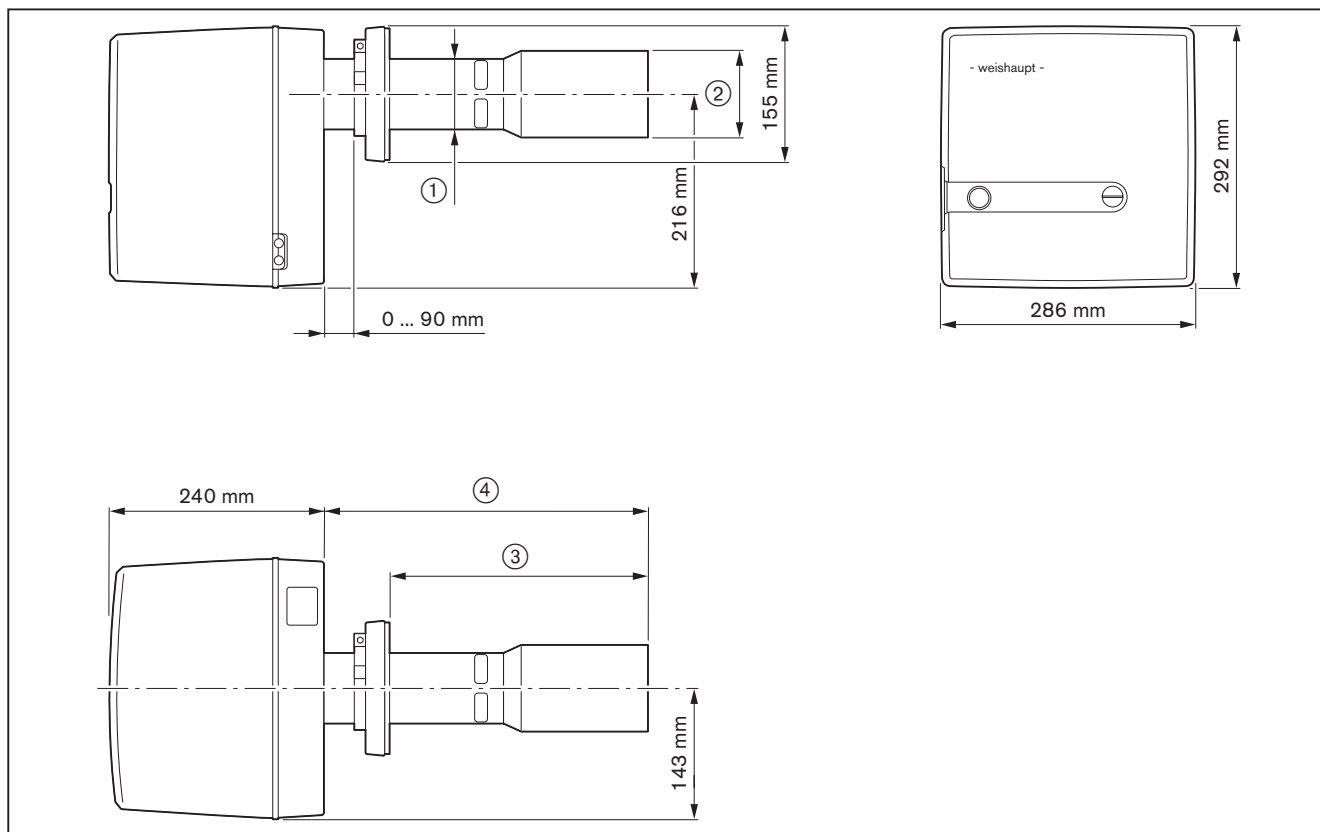
Mixing head	Combustion heat rating [kW]	Oil throughput [kg/h]
ME 1.19	16.5 ... 20.0	1.4 ... 1.7
ME 1.21	20.0 ... 24.0	1.7 ... 2.0
ME 1.22	23.0 ... 26.5	1.9 ... 2.2
ME 1.23	26.0 ... 29.0	2.1 ... 2.4
ME 1.24	28.0 ... 32.0	2.3 ... 2.7
ME 2.24	31.0 ... 35.0	2.6 ... 2.9
ME 2.25	34.0 ... 40.0	2.9 ... 3.4



- ① Combustion heat rating [kW] or [kg/h]
② Combustion chamber pressure [mbar]

3.4.7 Dimensions

Burner



	①	②	③	④
ME 1.10 ... 1.24	80 mm	100 mm	200 ... 290 mm	338 mm
ME 2.24/2.25	90 mm	105 mm	240 ... 330 mm	378 mm

3.4.8 Weight

approx. 13 kg

4 Installation

4 Installation

4.1 Installation conditions

Burner type and capacity graph

Burner and heat exchanger must be matched.

- Check burner type and burner capacity.

Installation location

- Prior to installation ensure that:
 - sufficient space is available for normal and service position [ch. 3.4.7],
 - sufficient combustion air is available, if necessary install ducted air intake,

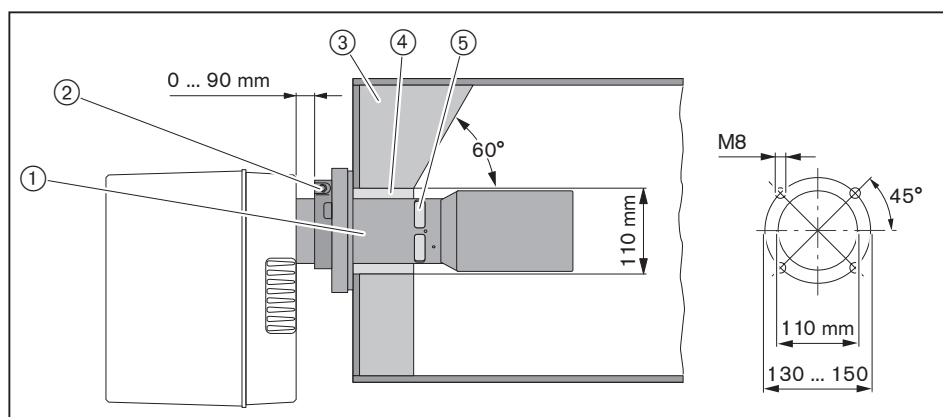
Prepare heat exchanger

The refractory ③ must not protrude beyond the recirculation aperture ⑤. It can, however, take a conical shape (min 60°).

The distance from flame tube front edge to the rear wall of the combustion chamber must be a minimum of 100 ... 150 mm to ensure sufficient flame burn-out.

If necessary, undo locknut ② on the sliding flange to adjust the installation depth of the burner [ch. 4.3].

Following installation, the aperture ④ between adapter pipe ① and refractory ③ should be filled with flame-proof, resilient material. Do not make solid.



- ① Adapter pipe
- ② Locknut on sliding flange
- ③ Refractory
- ④ Aperture
- ⑤ Recirculation aperture

4.2 Check rating

The burner as supplied to the customer is set for a specific burner capacity, see table.

Mixing head	Burner capacity [kW] ⁽¹⁾	Nozzle size [gph] ⁽¹⁾	Pump pressure [bar]	Load range [kW]
ME 1.19	approx. 17.0	0.35	10 ... 12 ⁽¹⁾ ... 15	16.5 ... 18.0
	approx. 18.2	0.40	10 ... 11 ⁽¹⁾ ... 15	18.0 ... 20.0
ME 1.21	approx. 21.7	0.45	12 ... 13 ⁽¹⁾ ... 15	20.0 ... 24.0
ME 1.22	approx. 25.8	0.50	12 ... 13 ⁽¹⁾ ... 15	23.0 ... 26.5
ME 1.23	approx. 27.9	0.55	12 ... 13 ⁽¹⁾ ... 15	26.0 ... 29.0
ME 1.24	approx. 30.9	0.60	12 ... 13 ⁽¹⁾ ... 15	28.0 ... 32.0
ME 2.24	approx. 33.1	0.65	13 ⁽¹⁾ ... 16	31.0 ... 35.0
ME 2.25	approx. 37.0	0.65	13 ... 16 ⁽¹⁾	34.0 ... 40.0

⁽¹⁾ Delivery status

Within the capacity range of the mixing head, the burner capacity can be changed via the nozzle size and the pump pressure.

If the capacity exceeds this capacity range, a different mixing head has to be fitted [ch. 9.5].

Recommended nozzles

Size	Make	Characteristics
ME 1.19	Danfoss	80°SR
ME 1.21 ... ME 2.25	Fluidics	80°SF
	Danfoss	80°SR

Nozzle selection table

Different load values are possible due to tolerances.

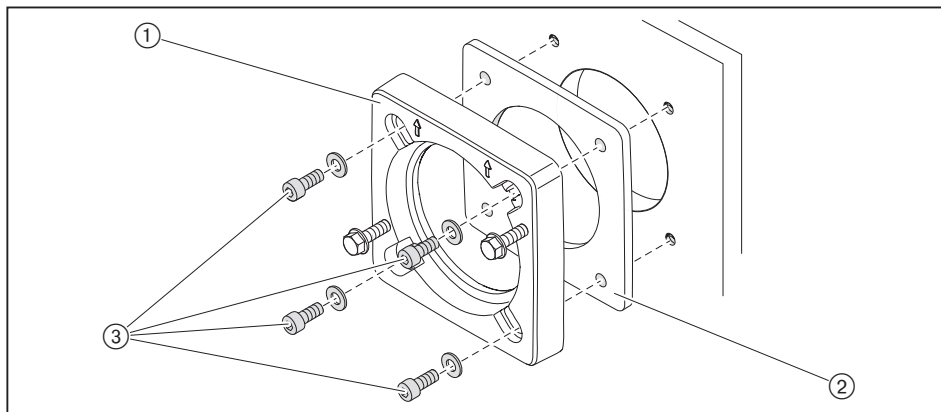
Stage 1		Burner capacity [kW] at pump pressure						
Nozzle size [gph]		10 bar	11 bar	12 bar	13 bar	14 bar	15 bar	16 bar
0.35		15.7	16.4	17.0	17.7	18.3	19.0	–
0.40		17.4	18.2	19.0	19.9	20.5	21.3	–
0.45		19.1	19.9	20.8	21.7	22.5	23.4	–
0.50		22.7	23.8	24.8	25.8	26.9	27.9	–
0.55		24.7	25.7	26.8	27.9	28.9	30.0	31.1
0.60		27.3	28.8	29.7	30.9	32.0	33.2	34.4
0.65		–	–	–	33.1	34.3	35.5	36.7
0.75		–	–	37.2	38.6	39.7	40.7	42.1

The capacity values were determined at a test bed, they do not correspond with the Weishaupt slide rule.

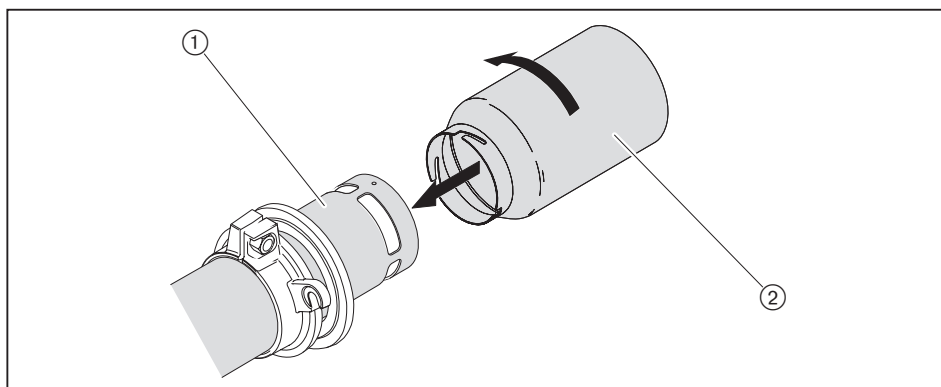
4 Installation

4.3 Burner installation

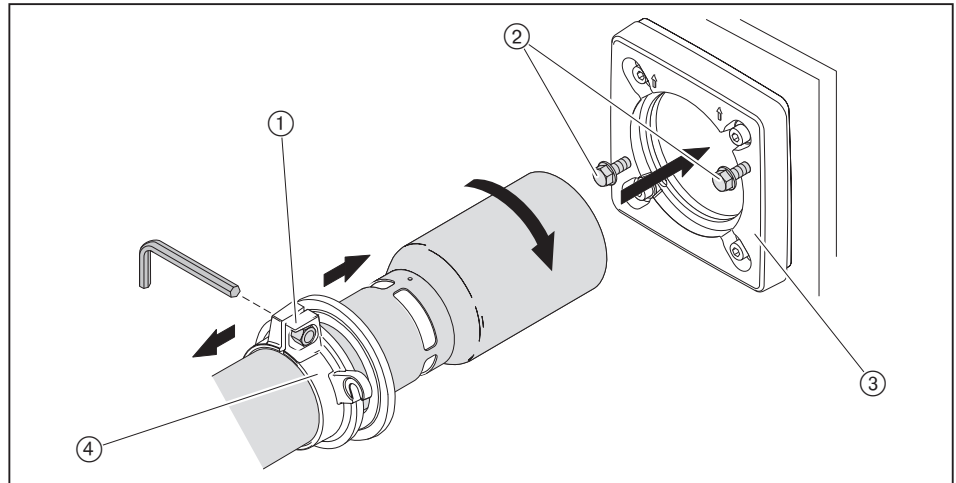
- ▶ Remove burner flange ① from burner housing.
- ▶ Fit flange gasket ② and burner flange ① to the heat exchanger using screws ③.
- ▶ The aperture between combustion head and refractory should be filled with flame-proof, resilient insulating material (do not make solid).



- ▶ Fix flame tube ② to adapter pipe ① using the bayonet principle.



- Fit burner to burner flange ③.
- Fix sliding flange ④ using the bayonet principle with the screws ②.
- If necessary, undo locknut ① on the sliding flange and adjust the installation depth by moving the burner [ch. 4.1].



5 Installation

5 Installation

5.1 Oil supply

Observe EN 12514-2, DIN 4755, TRÖI and local regulations.

Check conditions for oil pump

Suction resistance	max 0.4 bar ⁽¹⁾
Supply pressure	max 2 bar ⁽¹⁾
Supply temperature	max 60 °C ⁽¹⁾

⁽¹⁾ Measured at the pump.

Check conditions for oil hoses

Length	1200 mm
Oil hose connection	G ³ / ₈
Nominal pressure	10 bar
Thermal load	max 100 °C

Connect oil supply

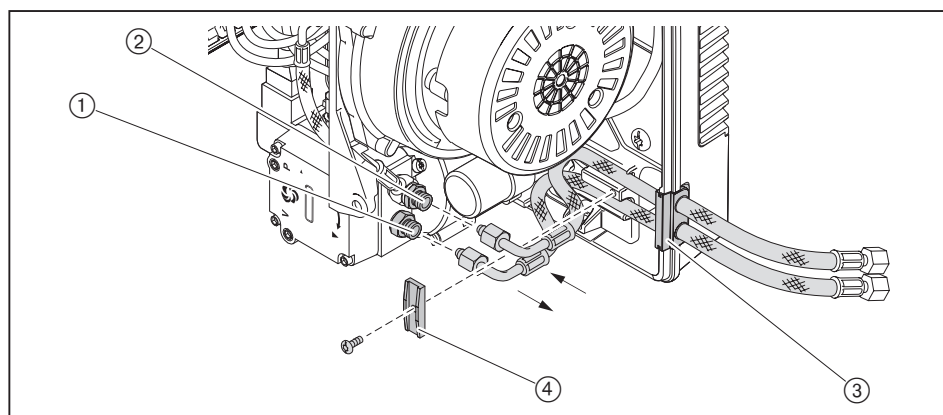


Damage to the oil pump caused by incorrect connection

Mixing up supply and return can damage the oil pump.

- Ensure correct connection of oil hoses to the supply and return of the pump.

- Fit oil hoses with bracket (4) and grommet (3) to burner.



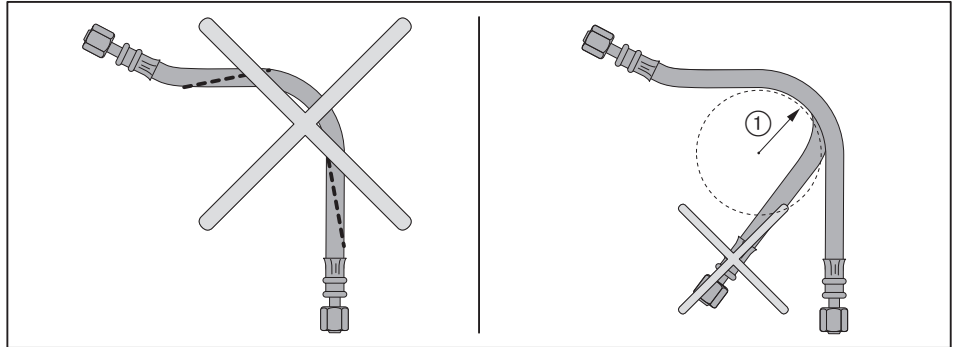
① Return

② Supply

- ▶ Connect oil supply and observe:
 - do not twist oil hoses
 - avoid mechanical tension
 - consider length of hose required for the service position,
 - do not kink oil hoses (curve radius ① of 50 mm must be maintained).

If these conditions for connection can not be met:

- ▶ Adapt oil supply on site.



Purge oil supply and ensure it is tight



CAUTION

Oil pump seized due to running dry
Pump could be damaged.

- ▶ Fill oil supply with oil and purge.

- ▶ Ensure oil supply is tight.

5 Installation

5.2 Electrical connection



Risk of electric shock

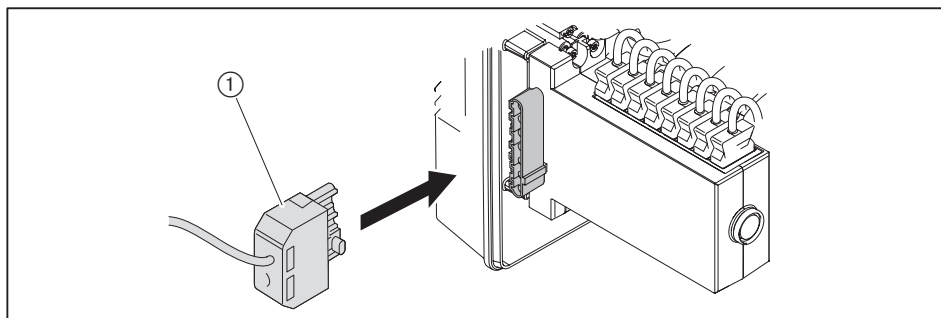
Working on the device when voltage is applied can lead to electric shock.

- ▶ Isolate the device from the power supply prior to starting any work.
- ▶ Safeguard against accidental restart.

The electrical connection must only be carried out by qualified electricians. Observe local regulations.

Observe wiring diagram [ch. 11.1].

- ▶ Check polarity and wiring of 7 pole connection plug ①.
- ▶ Plug in connection plug ①.



With remote reset, install connection line separately. Do not exceed maximum cable length of 10 metres.

6 Operation

6.1 Operating panel



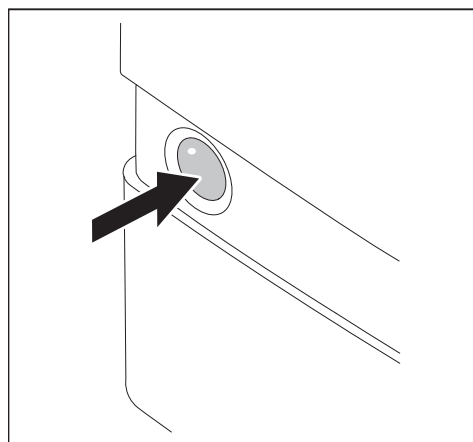
Damage to the combustion manager due to incorrect operation

Excessive pressure applied to the illuminated push button can damage the combustion manager.

- Only lightly press illuminated push button.

The illuminated push button on the combustion manager has the following functions:

- display operating condition [ch. 6.2],
- display fault codes [ch. 10.1.2],
- reset burner lockout [ch. 10.1.2].



Re-starting the burner during burner operation:

- Press illuminated push button for 1 second.

6.2 Display

Illuminated push button	Operating condition
orange	Start phase
Flashing orange	Ignition and pre-purge phase
Green	Operation
red	Fault [ch. 10]

Additional flashing signals can be read off as fault code [ch. 10].

7 Commissioning

7.1 Prerequisite

Commissioning must only be carried out by qualified personnel.

Only correctly carried out commissioning ensures the operational safety.

- ▶ Prior to commissioning ensure that:
 - all assembly and installation work has been carried out correctly,
 - sufficient combustion air is available, if necessary install ducted air intake
 - the annulus between flame tube and heat exchanger is filled
 - the heat exchanger is filled with medium
 - the regulating, control and safety devices are functioning and set correctly
 - the flue gas ducts are unimpeded
 - a measuring point conforming to standards is available to measure the flue gas
 - the heat exchanger and flue gas ducting up to the test point are sound (extraneous air influences the test results)
 - the operating instructions of the heat exchanger are complied with
 - a heat demand is available

Additional system-related tests could be necessary. Please observe the operating guidelines for the individual components.

On installations with process equipment, the conditions for safe operation and commissioning must be met, see worksheet 8-1 (Print No. 831880xx).

7.1.1 Connect measuring devices

Pressure measuring device and ammeter

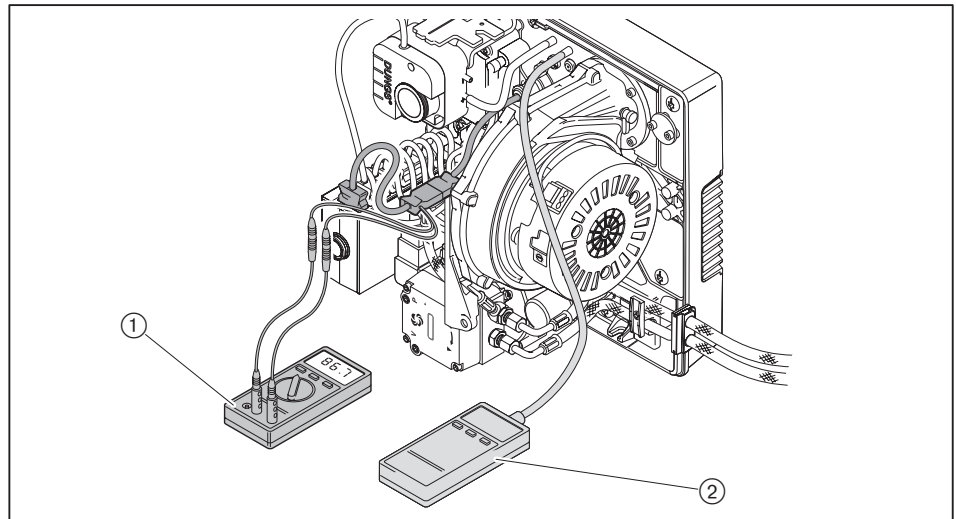
- Pressure measuring device for mixing pressure.
- Ammeter for flame signal.
- ▶ Connect pressure measuring device ②.

Test adapter No. 13 required (Order No. 240 050 12 052).

- ▶ Unplug plug No. 13.
- ▶ Plug in test adapter No. 13.
- ▶ Connect ammeter ①.

Flame Signal

Extraneous light detection from	13 μ A
Minimum flame signal	35 μ A
Recommended flame signal	70 ... 100 μ A



7 Commissioning

Oil pressure measuring devices on oil pump

- Vacuum gauge for suction resistance/supply pressure.
- Pressure gauge for pump pressure.

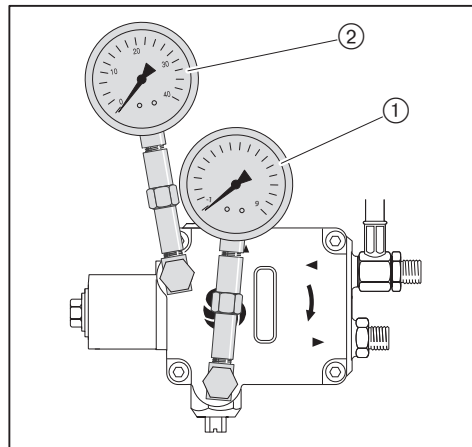


Oil leakage from oil pressure measuring devices due to constant load

Oil pressure measuring devices could be damaged and cause environmental pollution through leakage.

- ▶ Remove oil measuring devices once commissioning is complete.

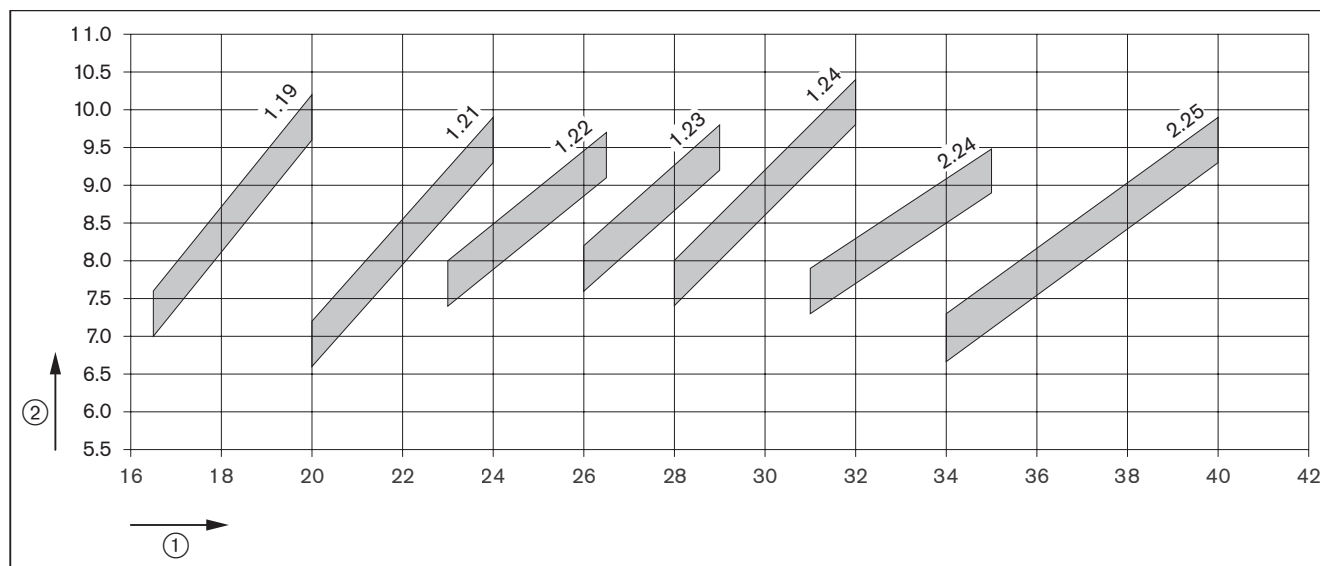
- ▶ Close fuel shut off devices.
- ▶ Remove closing plug on the pump.
- ▶ Connect vacuum gauge ① and pressure gauge ②.



7.1.2 Setting values

Determine mixing pressure

- Determine the mixing pressure required for the preset combustion heat rating from the diagram and note down.



- ① Combustion heat rating [kW]
- ② Mixing pressure [mbar]
- Guide values, which may vary depending on combustion chamber resistance.

7.1.3 Preset air pressure switch

The presetting of the air pressure switch is only valid for the initial burner start. During commissioning, the pressure switch must be set correctly.

- Preset air pressure switch to approx. 5.5 mbar.

7.2 Adjusting the burner



Risk of electric shock

Touching the ignition device can lead to electric shock.

- ▶ Do not touch ignition device during the ignition process.

- ▶ During commissioning check:
 - flame signal [ch. 7.1.1],
 - suction resistance or flow pressure of oil pump [ch. 5.1],
 - mixing pressure [ch. 7.1.2].

1. Start the burner

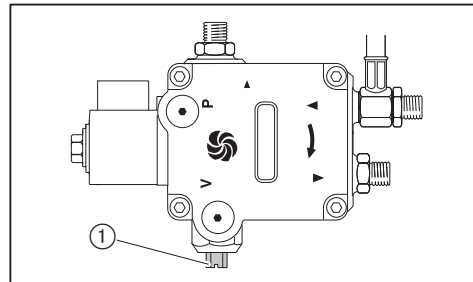
Heat demand from the boiler controller required.

- ▶ Open fuel shut off devices.
- ▶ Switch on voltage supply.
- ✓ Illuminated push button lights up red.
- ▶ Press illuminated push button for 1 second.
- ✓ Burner starts in accordance with the programme sequence [ch. 3.3.4].

2. Set pump pressure

The pump pressure must be set according to the nozzle selected.

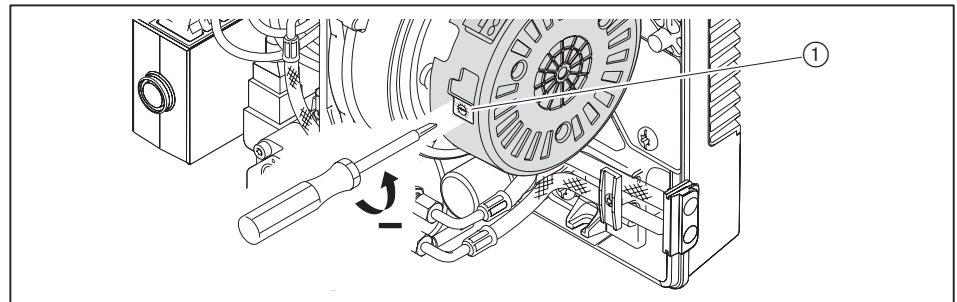
- ▶ Check pump pressure at pressure gauge.
- ▶ Set pressure using pressure regulating screw ①:
 - increase pressure: clockwise rotation,
 - decrease pressure: anticlockwise rotation.



- ▶ Check combustion values

3. Determine combustion limit

- ▶ Read the position of the potentiometer ① on the scale and note it down.
- ▶ Determine combustion limit and slowly reduce O₂ content using the potentiometer ① (turn to the left) until the combustion limit determined is reached (CO content approx. 100 ppm or smoke number approx. 1).



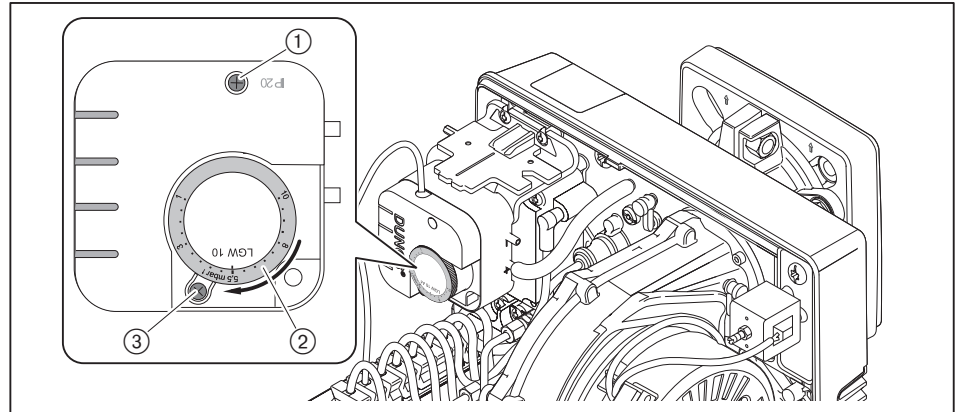
- ▶ Measure and document O₂ content.
- ▶ Read air number (λ) and note down.

4. Set air pressure switch



To ensure protection against accidental contact with the electrical connections, the cover must be secured with screw ①.

- ▶ Undo screw ③.
- ▶ Slowly turn setting cam ②, until the burner shuts down.
- ✓ The air pressure switch is now set.
- ✓ Shutdown limit of the air pressure switch corresponds to the combustion limit.
- ▶ Re-tighten screw ③.



5. Set excess air

- ▶ Set the position of potentiometer ① previously noted down.
- ▶ Start the burner.
- ▶ Check combustion values

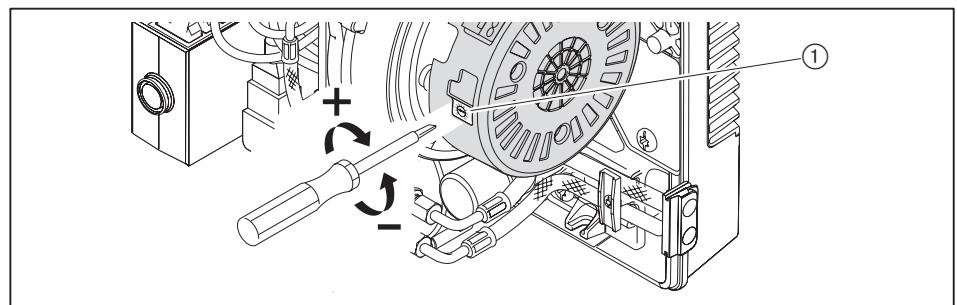
Increase air number (λ) previously noted down to ensure sufficient excess air:

- by 0.15 ... 0.2 (equates to 15 ... 20 % excess air),
- by more than 0.2 for more difficult conditions, such as:
 - dirty combustion air,
 - fluctuating intake temperature,
 - fluctuating chimney draught.

Example

$$\lambda + 0.15 = \lambda^*$$

- ▶ Set excess air (air number λ^*) via potentiometer ① whilst observing the mixing pressure, do not exceed CO content of 50 ppm:
 - increase O_2 content = clockwise rotation,
 - decrease O_2 content = anticlockwise rotation.



- ▶ Check combustion values [ch. 7.4].

7 Commissioning

7.3 Concluding work



Oil leakage from oil pressure measuring devices due to constant load

Oil pressure measuring devices could be damaged and cause environmental pollution through leakage.

- ▶ Remove oil measuring devices once commissioning is complete.

- ▶ Check control and safety devices.
- ▶ Check tightness of oil carrying components.
- ▶ Enter combustion values and settings in the commissioning record and/or test sheet.
- ▶ Mount cover on burner.
- ▶ Inform the operator about the use of the equipment.
- ▶ Hand the installation and operating manual to the operator and inform him that this should be kept with the appliance.
- ▶ Point out to operator that the installation should be serviced annually.

7.4 Check combustion

Check flue gas temperature

- ▶ Check flue gas temperature.
- ▶ Ensure that the flue gas temperature complies with the data provided by the boiler manufacturer.
- ▶ If necessary adjust flue gas temperature, e.g.:
 - Increase burner capacity to avoid condensation in the flue gas ducts, except on condensing units.
 - Reduce burner capacity to improve efficiency.
 - Adjust heat exchanger to the data provided by the manufacturer.

Determine flue gas losses

- ▶ Measure combustion air temperature (t_L) near the air damper(s).
- ▶ Measure oxygen content (O_2) and flue gas temperature (t_A) at the same time at one point.
- ▶ Determine flue gas losses using the following formula:

$$q_A = (t_A - t_L) \cdot \left(\frac{A_2}{21 - O_2} \right) + B$$

q_A Flue gas losses [%]

t_A Flue gas temperature [°C]

t_L Combustion air temperature [°C]

O_2 Volumetric content of oxygen in dry flue gas [%]

Fuel factors	Fuel oil
A2	0.68
B	0.007

8 Shutdown

For breaks in operation:

- ▶ Switch off burner.
- ▶ Close fuel shut off devices.

9 Servicing

9.1 Notes on servicing



Risk of electric shock

Working on the device when voltage is applied can lead to electric shock.

- ▶ Isolate the device from the power supply prior to starting any work.
- ▶ Safeguard against accidental restart.



Danger of getting burned on hot components

Hot components can lead to burns.

- ▶ Allow components to cool.

Servicing must only be carried out by qualified personnel. The combustion plant should be serviced annually. Depending on site conditions more frequent checks may be required.

Components, which show increased wear and tear or whose design lifespan is or will be exceeded prior to the next service should be replaced as a precaution.

The design lifespan of the components is listed in the service plan [ch. 9.2].



Weishaupt recommends a service contract is entered into to ensure regular inspections.

The following components must only be replaced and must not be repaired:

- combustion manager
- flame sensor
- actuator
- oil solenoid valve
- pressure switch

Prior to every servicing

- ▶ Inform the operator about the extent of service work to be carried out.
- ▶ Switch off mains switch of installation and safeguard against accidental reactivation.
- ▶ Close fuel shut off devices.
- ▶ Remove cover.
- ▶ Unplug boiler control connection plug from combustion manager.

Following servicing



Risk of electric shock

Touching the ignition device can lead to electric shock.

- ▶ Do not touch ignition device during the ignition process.

- ▶ Check tightness of oil carrying components.
- ▶ Check function of:
 - ignition,
 - flame monitoring,
 - oil pump (pump pressure and suction resistance),
 - control and safety devices.
- ▶ Check combustion values, if necessary re-adjust the burner.
- ▶ Enter combustion values and settings in the commissioning record.
- ▶ Refit cover.

9.2 Service plan

Components	Criteria / design lifespan ⁽¹⁾	Service procedure
Air duct	Soiling	► Clean
Air damper (optional)	Soiling	► Clean
Air pressure switch	Switch point	► Check
	250 000 burner starts or 10 years ⁽²⁾	► Replace
Ignition cable	Damage	► Replace
Ignition electrode	Soiling	► Clean
	Damage/wear	► Replace
Combustion Manager	250 000 burner starts or 10 years ⁽²⁾	► Replace
Flame sensor	Soiling	► Clean
	Damage	► Replace
	250 000 burner starts or 10 years ⁽²⁾	
Flame tube/mixing head	Soiling	► Clean
	Damage	► Replace
Oil nozzle	Soiling/wear	► Replace
		Recommendation: at least every 2 years
Nozzle shut off	Soundness	► Replace
Oil pump filter	Soiling	► Replace
Oil hose	Damage/oil escaping	► Replace
		Recommendation: every 5 years
Oil solenoid valve	Soundness	► Replace oil pump
	250 000 burner starts or 10 years ⁽²⁾	

⁽¹⁾ The specified design lifespan applies for typical use in heating, hot water and steam systems as well as for thermal process systems to EN 746.

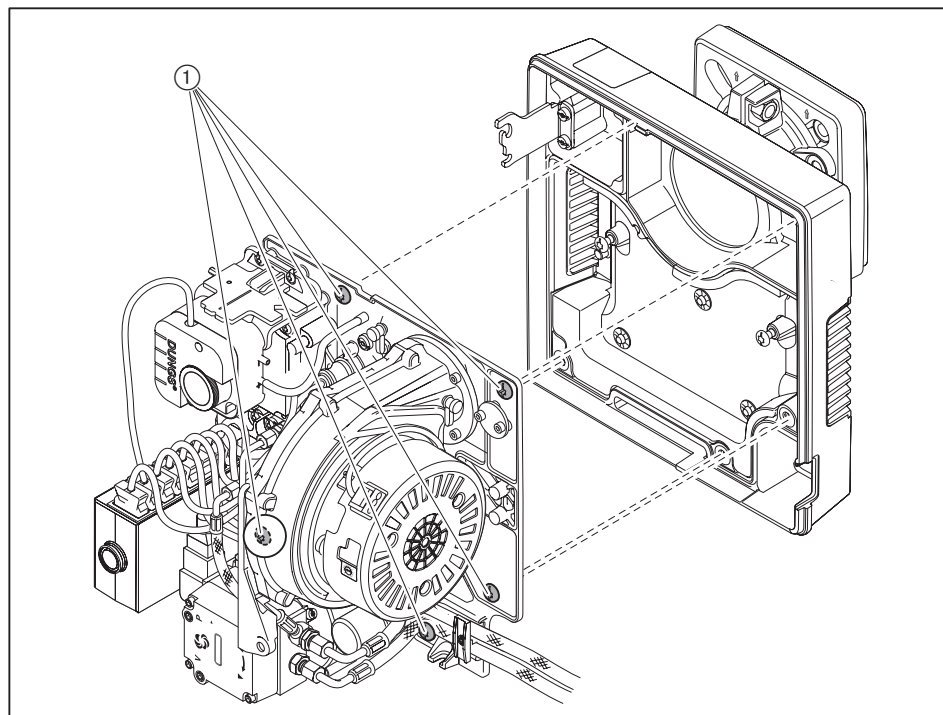
⁽²⁾ If a criterion is reached, carry out maintenance measures.

9 Servicing

9.3 Service position

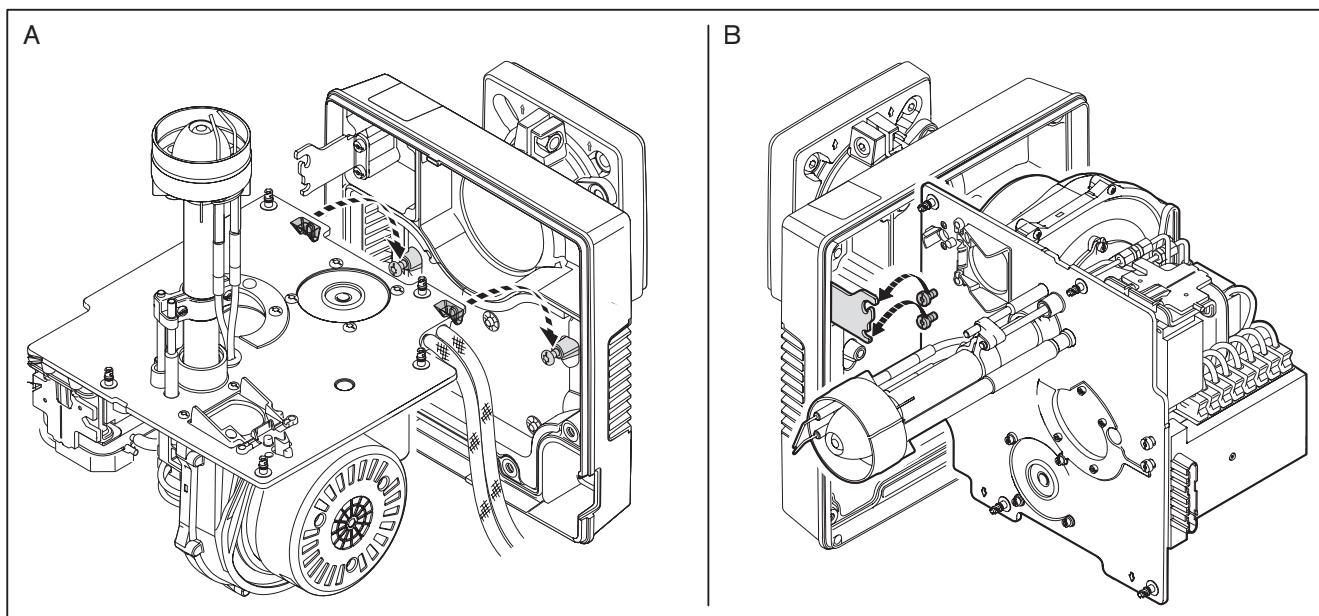
Observe notes on servicing [ch. 9.1].

- Open quick release fastener ①.



Service position A and B

- Place the burner into the required service position.



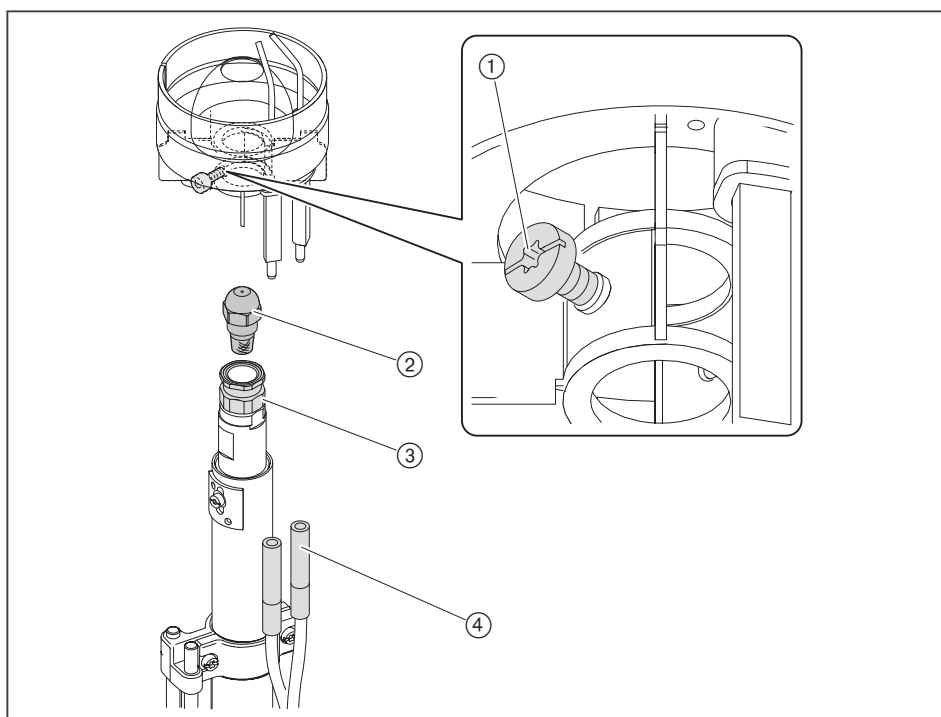
9.4 Replace nozzle

Observe notes on servicing [ch. 9.1].



Do not clean nozzles, always fit new nozzles.

- ▶ Place burner into service position A [ch. 9.3].
- ▶ Unplug ignition cable ④.
- ▶ Undo screws ① and remove mixing head.
- ▶ Counter-hold on the nozzle body ③ using a spanner and remove nozzle ②.
- ▶ Fit new nozzle ensuring it is seated tightly.
- ▶ Fit mixing head up to stop and secure.
- ▶ Set nozzle distance [ch. 9.10]
- ▶ Set ignition electrodes [ch. 9.7]



9 Servicing

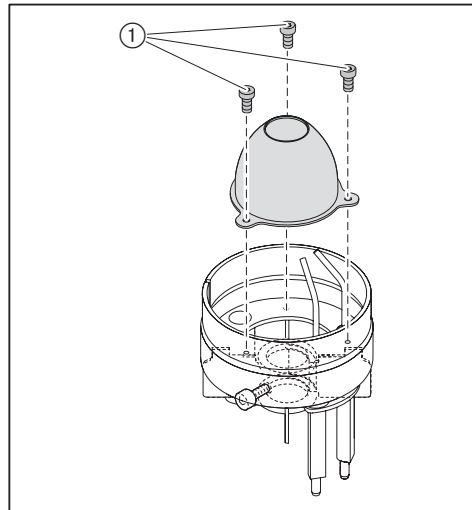
9.5 Removing and refitting air nozzle

9.5.1 Mixing head 1.19 ... 1.24

Observe notes on servicing [ch. 9.1].

Removing

- ▶ Place burner into service position A [ch. 9.3].
- ▶ Remove screws ① and remove air nozzle.



Refitting

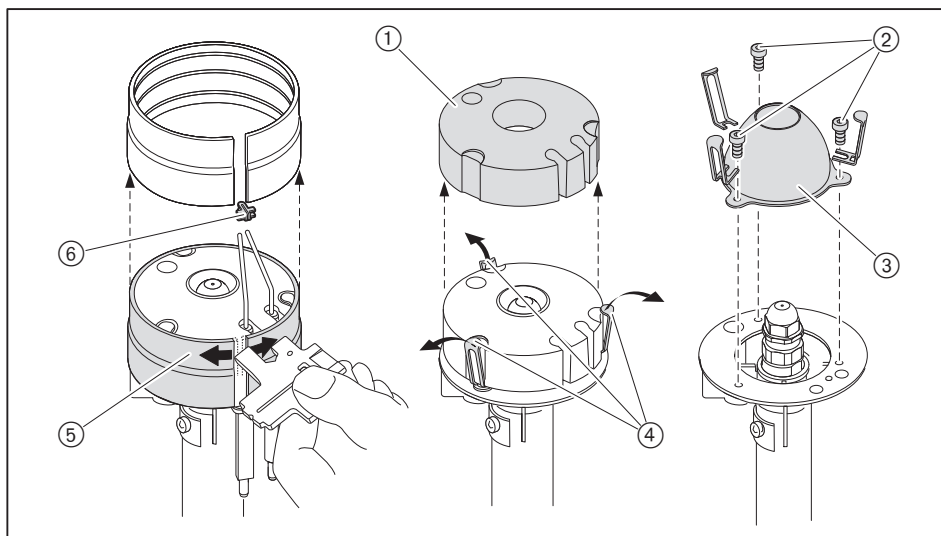
- ▶ Refit air nozzle in reverse order.
- ▶ Set mixing head [ch. 9.10]
- ▶ Set ignition electrodes [ch. 9.7]

9.5.2 Mixing head 2.24 ... 2.25

Observe notes on servicing [ch. 9.1].

Removing

- ▶ Place burner into service position A [ch. 9.3].
- ▶ Press apart metering ring ⑤ using the setting gauge and remove.
- ▶ Remove clip ⑥ for metering ring.
- ▶ Remove ignition electrodes [ch. 9.8].
- ▶ Lightly open retaining clips ④.
- ▶ Remove HTI refractory ①.
- ▶ Remove screws ② and remove air nozzle ③ with retaining clips.



Refitting

- ▶ Refit air nozzle in reverse order.
- ▶ Set mixing head [ch. 9.10]
- ▶ Set ignition electrodes [ch. 9.7]

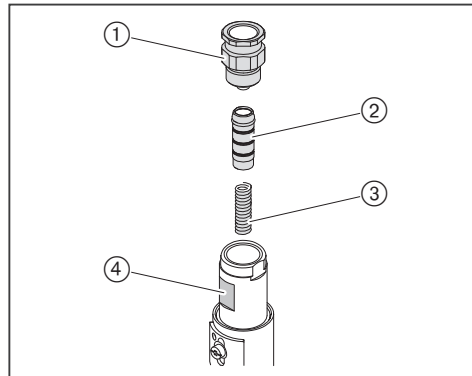
9 Servicing

9.6 Removing and refitting nozzle shut off

Observe notes on servicing [ch. 9.1].

Removing

- ▶ Remove nozzle [ch. 9.4].
- ▶ Counter-hold the nozzle assembly ④ using a spanner and remove nozzle holder ①.
- ▶ Remove valve piston ② and compression spring ③ using a suitable tool (e. g. pliers), do not damage valve piston and O ring.



Refitting

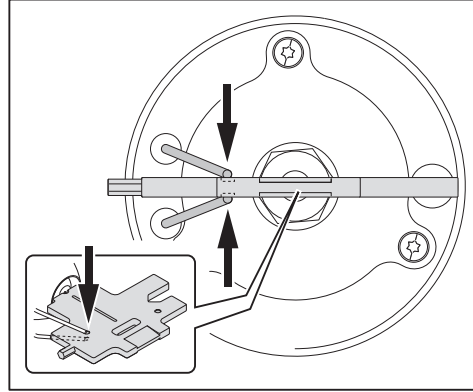
Do not refit damaged valve pistons, replace as necessary.

- ▶ Refit nozzle shut off in reverse order.
- ▶ Check nozzle distance [ch. 9.10].
- ▶ Set ignition electrodes [ch. 9.7]

9.7 Set ignition electrodes

Observe notes on servicing [ch. 9.1].

- ▶ Place burner into service position B [ch. 9.3].
- ▶ Set ignition electrodes with the help of the setting gauge.



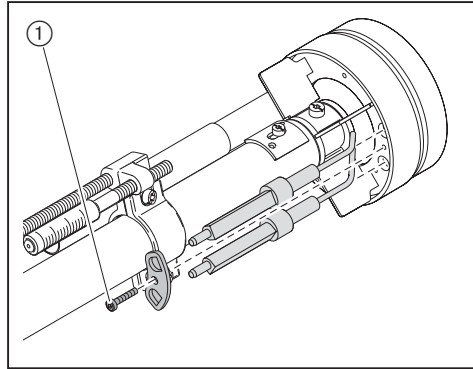
9 Servicing

9.8 Removing and refitting ignition electrodes

Observe notes on servicing [ch. 9.1].

Removing

- ▶ Place burner into service position B [ch. 9.3].
- ▶ Unplug ignition cable.
- ▶ Remove screws ① and remove ignition electrodes from mixing head.



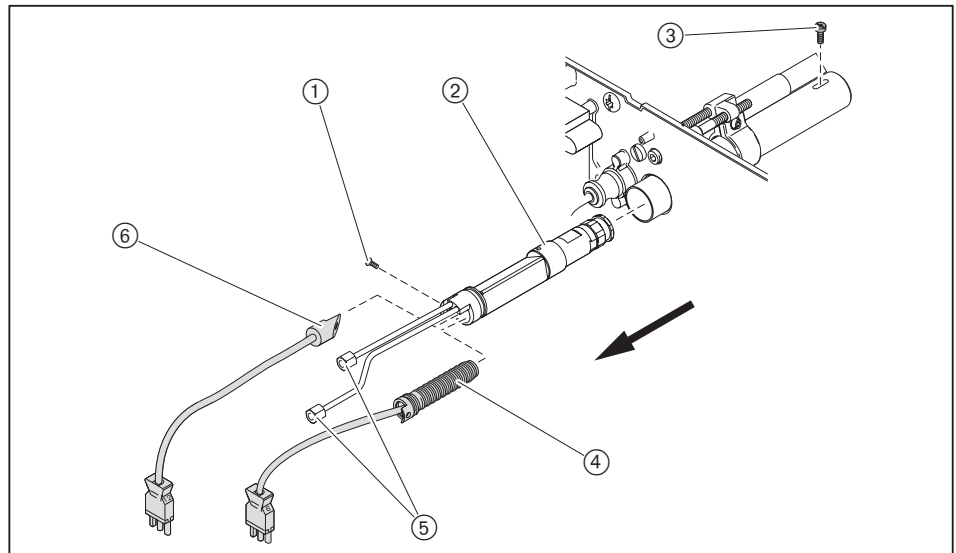
Refitting

- ▶ Refit ignition electrodes in reverse order.
- ▶ Set ignition electrodes.

9.9 Removing heat exchanger and temperature switch

Observe notes on servicing [ch. 9.1].

- ▶ Place burner into service position B [ch. 9.3].
- ▶ Remove nozzle [ch. 9.4].
- ▶ Unplug plug number 6 and 12.
- ▶ Undo oil lines ⑤.
- ▶ Remove screw ③ and remove nozzle assembly ②.
- ▶ Remove screw ① and temperature switch ⑥.
- ▶ Remove heat exchanger ④ using a suitable tool (e.g. pliers).



9 Servicing

9.10 Set mixing head

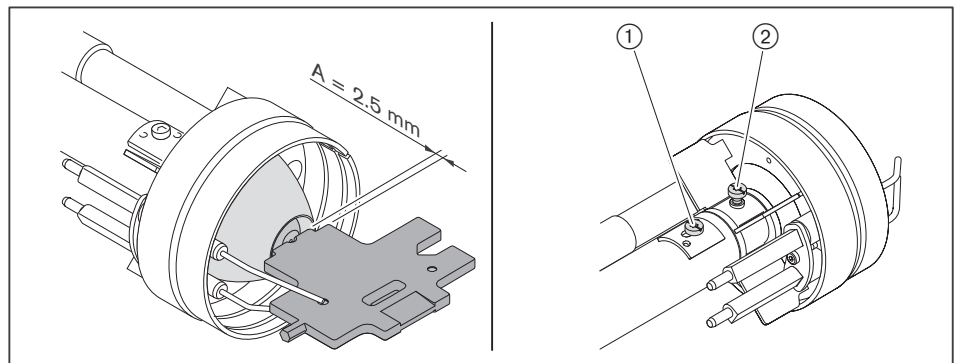
Observe notes on servicing [ch. 9.1].

Set nozzle distance

- ▶ Place burner into service position B [ch. 9.3].
- ▶ Insert setting gauge and check dimension A (2.5 mm).

If the value measured deviates from dimension A:

- ▶ Undo screw ① on the guide tube and screw ② on the mixing head.
- ▶ Adjust nozzle body until dimension A is reached and ensure that the mixing head is flush with the guide tube.
- ▶ Tighten screw ① and screw ②.



9.11 Set recirculation aperture

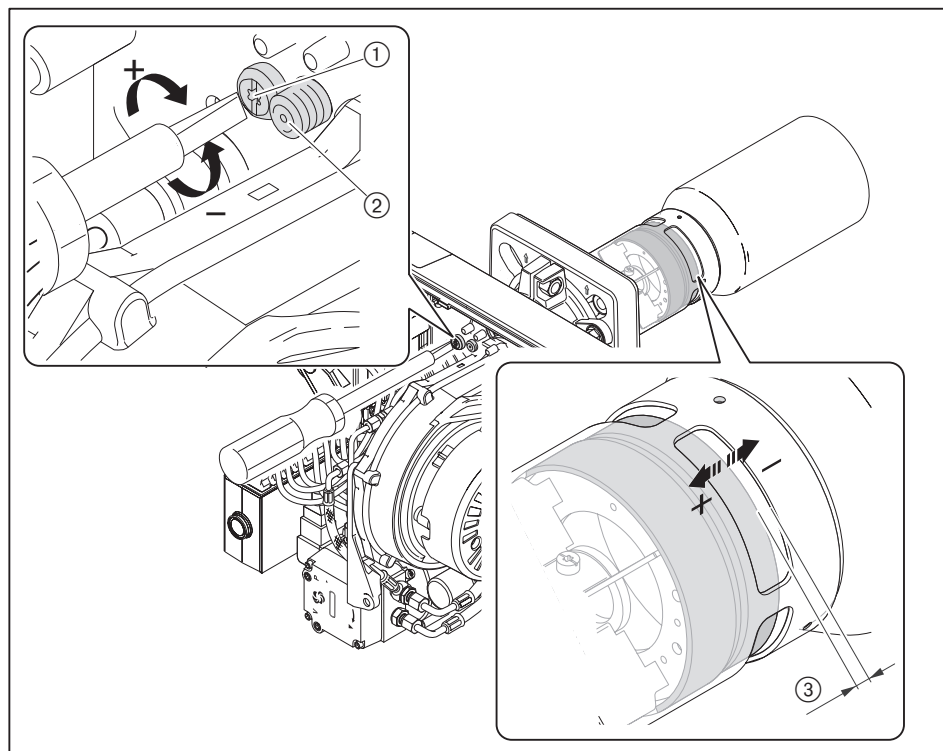
Observe notes on servicing [ch. 9.1].

- Turn setting screw ① until the scale on the indicating bolt ② is equal to the table value.

The indicating bolt has been factory preset to show the clearance of the recirculation aperture ③ in mm.

If the indicating bolt has been moved (e. g. during transport):

- Remove plug from indicating bolt ②.
- Turn indicating bolt until it matches the current recirculation aperture.
- Re-fit stopper.



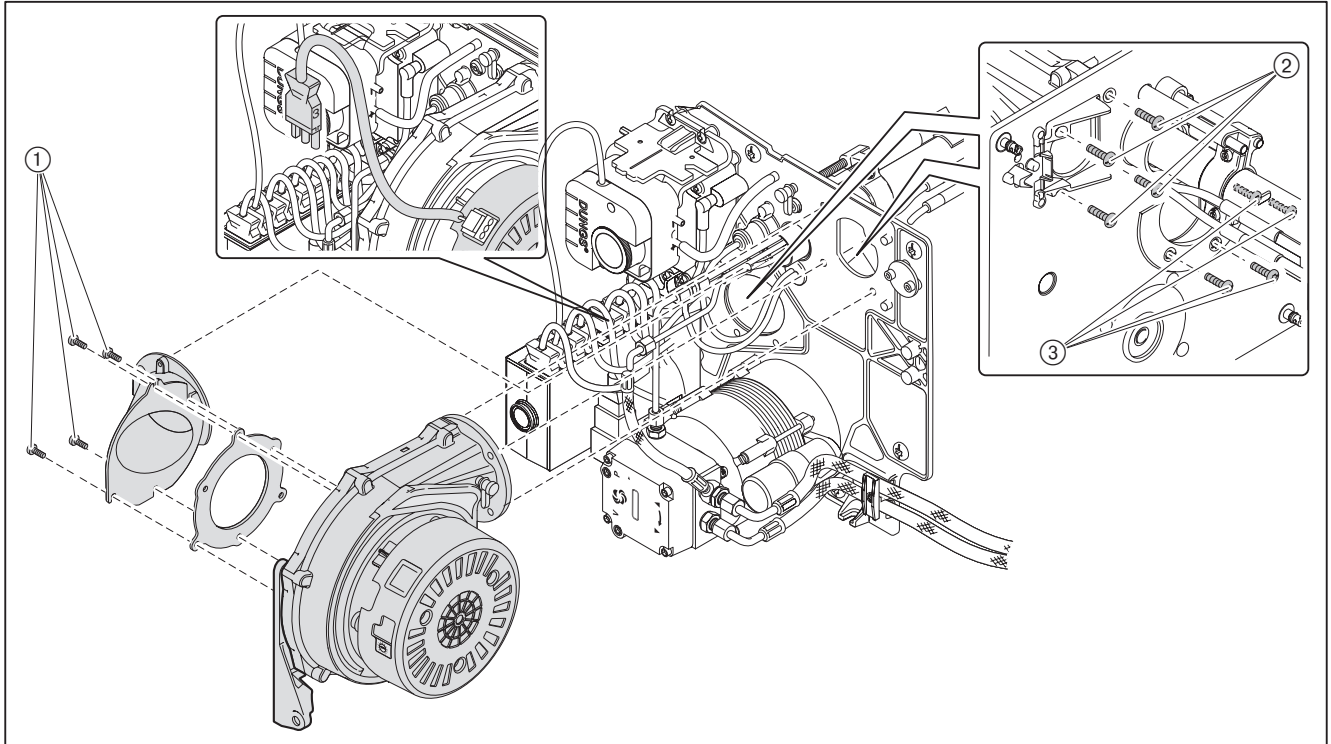
Mixing head	Recirculation aperture [mm]
ME 1.19	1.5
ME 1.21	4.0
ME 1.22	4.0
ME 1.23	5.0
ME 1.24	5.0
ME 2.24	2.0
ME 2.25	2.0

9 Servicing

9.12 Removing the fan

Observe notes on servicing [ch. 9.1].

- ▶ Place burner into service position B [ch. 9.3].
- ▶ Unplug plug No. 3.
- ▶ Remove screws ② from fan and screws ③ from intake connection.
- ▶ Remove fan.
- ▶ Remove screws ①, remove intake connection and gasket.



9.13 Removing and refitting oil pump

Observe notes on servicing [ch. 9.1].

Removing

- ▶ Place burner into service position B [ch. 9.3].
- ▶ Close fuel shut off devices.
- ▶ Unplug plug ①.
- ▶ Remove oil hoses ⑤ and screwed unions ⑥.
- ▶ Remove oil line ④.
- ▶ Undo screws ② and remove oil pump.

Refitting

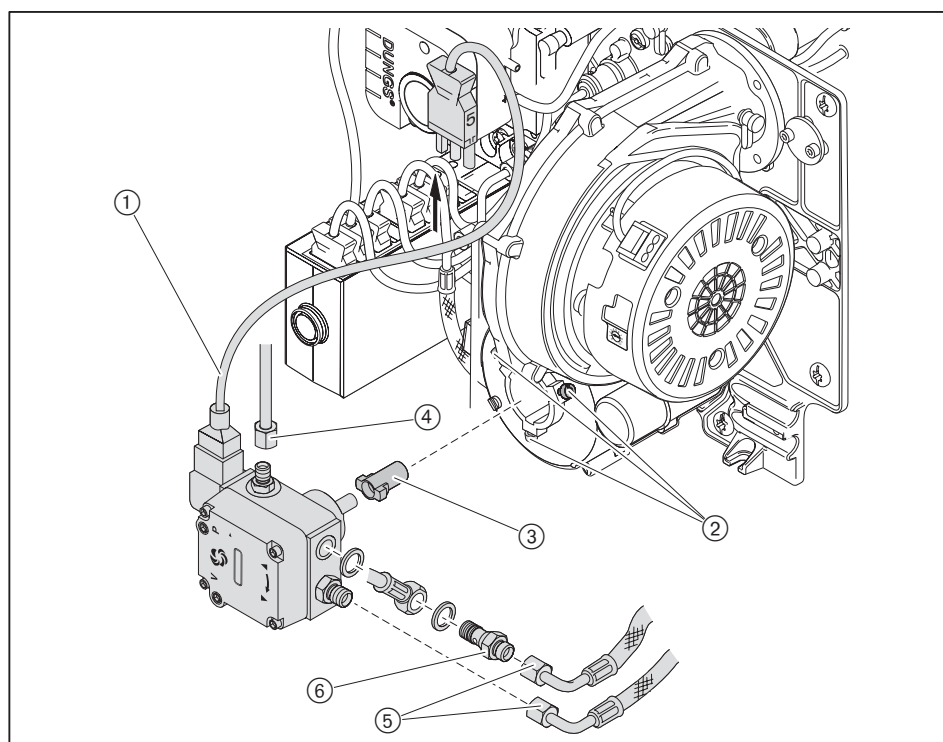
- ▶ Install oil pump in reverse order and:
 - ensure correct alignment of coupling ③,
 - ensure correct allocation of flow and return of the oil hoses.



Damage to the oil pump caused by incorrect connection

Mixing up supply and return can damage the oil pump.

- ▶ Ensure correct connection of oil hoses to the supply and return of the pump.

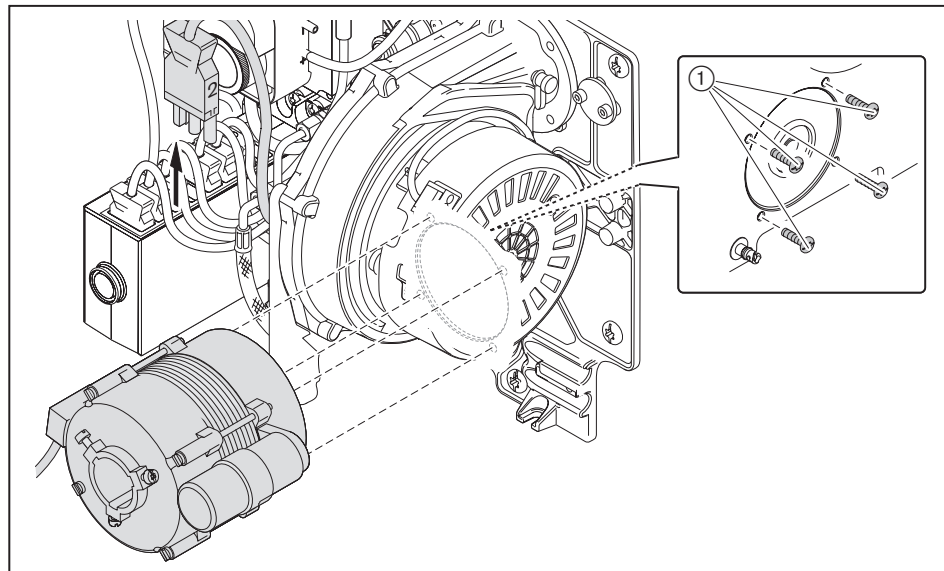


9 Servicing

9.14 Remove pump motor

Observe notes on servicing [ch. 9.1].

- ▶ Remove the oil pump [ch. 9.13].
- ▶ Unplug plug No. 2.
- ▶ Remove screws ① and remove motor.

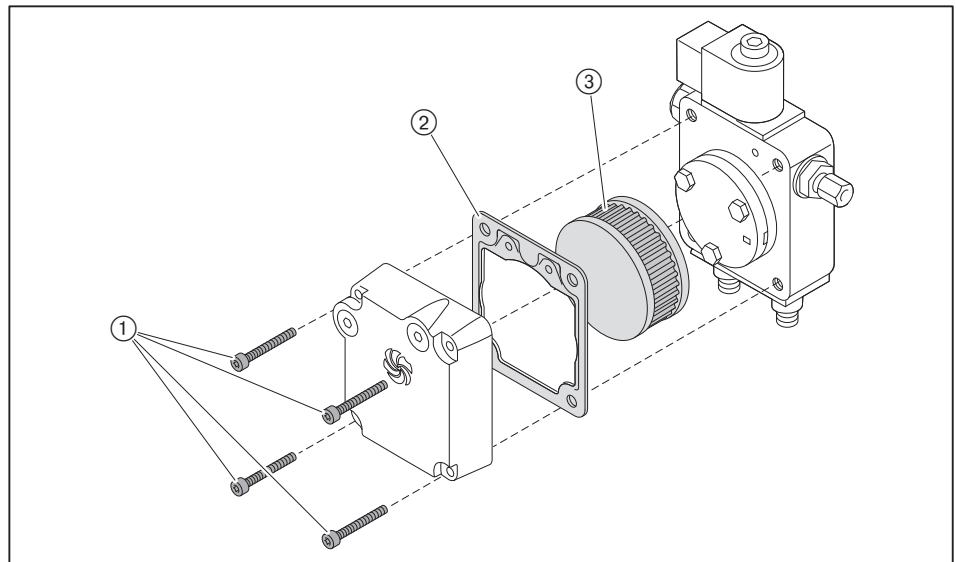


9.15 Removing and refitting oil pump filter

Observe notes on servicing [ch. 9.1].

Removing

- ▶ Close fuel shut off devices.
- ▶ Remove bolts ①.
- ▶ Remove pump cover.
- ▶ Replace filter ③ and gasket ②.



Refitting

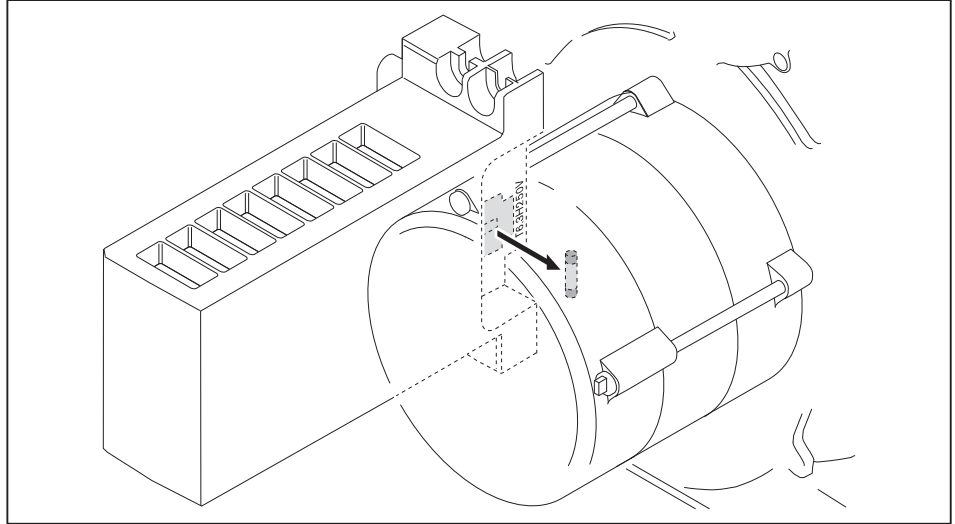
- ▶ Refit filter in reverse order ensuring sealing surfaces are clean.

9 Servicing

9.16 Replacing the fuse

Observe notes on servicing [ch. 9.1].

- ▶ Remove all plugs from the combustion manager.
- ▶ Remove screws from the combustion manager.
- ▶ Remove combustion manager.
- ▶ Replace fuse (T6.3H, IEC 127-2/5).



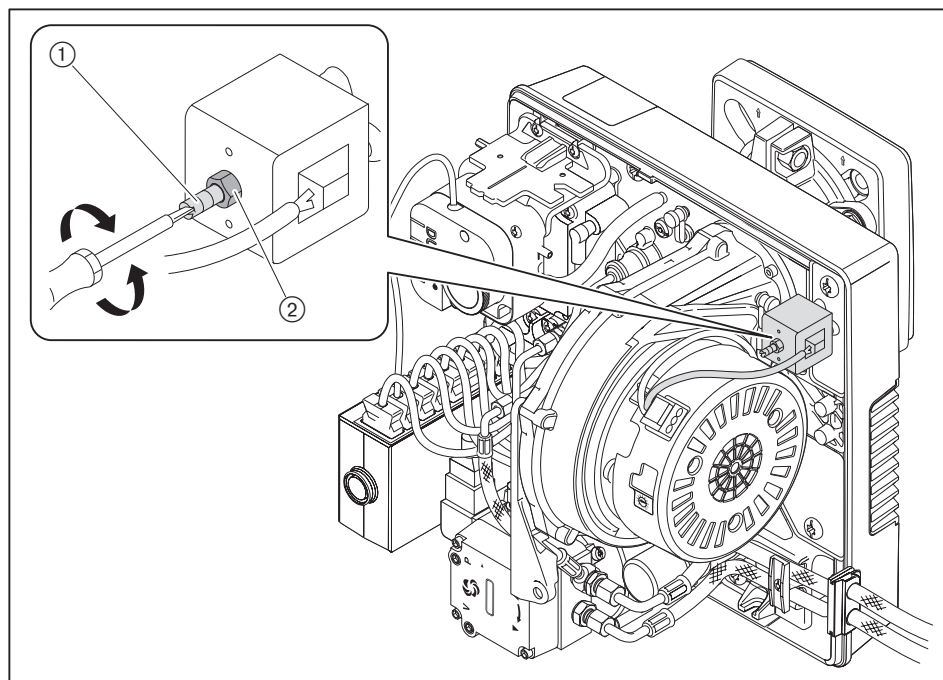
9.17 Optimise start behaviour (optional)

Observe notes on servicing [ch. 9.1].

It is possible to optimise the start behaviour by increasing the fan speed.

Burner with air damper fitted.

- ▶ Increase fan speed via potentiometer until 10 is reached on the scale.
- ✓ Maximum fan speed has been set.
- ▶ Undo locknut ② on nozzle solenoid (left hand thread).
- ▶ Set excess air using setting screw ①:
 - increase O₂ content = clockwise rotation,
 - decrease O₂ content = anticlockwise rotation.



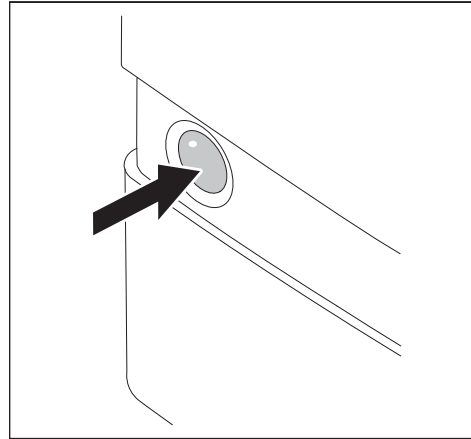
10 Troubleshooting

10.1 Procedures for fault conditions

The combustion manager recognises irregularities of the burner and indicates these with the illuminated push button.

The following conditions can occur:

- illuminated push button off [ch. 10.1.1],
- illuminated push button red [ch. 10.1.2],
- illuminated push button flashes [ch. 10.1.3].



10.1.1 Illuminated push button off

The following faults may be corrected by the operator:

Fault	Cause	Rectification
Burner not operating	External fuse has tripped ⁽¹⁾	► Check fuse.
	Heating switch is set to Off	► Switch on heating switch.
	Temperature limiter or pressure limiter on heat exchanger has triggered ⁽¹⁾	► Reset temperature limiter or pressure limiter on heat exchanger.
	Low water safety interlock on heat exchanger has triggered ⁽¹⁾	► Top up water. ► Reset low water safety interlock on heat exchanger.
	Temperature regulator or pressure regulator on heat exchanger has been set incorrectly	► Adjust temperature regulator or pressure regulator on heat exchanger.
	Boiler or heating circuit control is not functioning or has not been set correctly	► Check function and setting of boiler or heating circuit control.

⁽¹⁾ Notify your heating contractor or Weishaupt Customer Service if the problem occurs repeatedly.

10.1.2 Illuminated push button red

A burner fault has occurred. The burner is in lockout. Prior to resetting, the error code can be called up and used to control the cause of the fault.

Read error code

Only 5 seconds after a fault occurred can it be analysed and read.

- ▶ Press illuminated push button for 5 seconds.
- ✓ Illuminated push button briefly lights up orange.
- ✓ Illuminated push button flashes red.
- ▶ Count between the flashing pauses and flashing signals and note down.
- ▶ Rectify cause of fault, see table.

Resetting



Damage resulting from incorrect fault repair

Incorrect fault repair can cause damage to the equipment and injure personnel.

- ▶ Do not carry out more than 2 lockout resets successively.
- ▶ Faults must be rectified by qualified personnel.

- ▶ Press illuminated push button for 1 second.
- ✓ Red signal extinguishes.
- ✓ Burner has been reset.

10 Troubleshooting

Error codes with lockout

The following faults must only be rectified by qualified personnel:

Fault codes	Fault	Cause	Rectification
2 x flashing No flame, end of safety time	Oil pump supplies no oil	Oil supply leaking	► Check oil supply
		Anti siphon valve does not open	► Check valve, if necessary replace
		Shut off device closed	► Open shut off device
		Pre-filter strainer soiled	► Replace pre-filter strainer
		Oil pump defective	► Replace oil pump [ch. 9.13]
	No oil throughput at the nozzle	Oil nozzle blocked	► Replace nozzle
	No ignition	Ignition electrode dirty or wet	► Clean ignition electrode
		Ignition electrode spark gap too big or short circuited	► Set ignition electrode [ch. 9.7]
		Ceramic insulator defective	► Replace ignition electrodes
		Ignition cable defective	► Replace ignition cable
		Ignition unit defective	► Replace ignition unit
	Solenoid valve does not open	Coil defective	► Replace coil
	Combustion manager does not detect a flame signal	Flame sensor soiled	► Clean flame sensor
		Flame sensor defective	► Replace flame sensor
		Illumination insufficient	► Check burner setting
			► Check correct position of illumination tube.
	Pump motor does not run	Oil pump seized	► Replace oil pump [ch. 9.13]
		Capacitor defective	► Replace capacitor
		Pump motor defective	► Replace pump motor
	No flame formation despite ignition and oil supply	Nozzle distance incorrect	► Check nozzle distance, adjust if necessary [ch. 9.10]
		Recirculation aperture too big	► Reduce recirculation aperture [ch. 9.11].
		Mixing pressure too high	► Check mixing pressure [ch. 7.1.2]
Flashing 3 times Air pressure switch fault	Air pressure switch does not react	Air pressure switch set incorrectly	► Reset air pressure switch
		Air pressure switch defective	► Check air pressure switch, if necessary replace
	Setpoint speed of fan is not achieved	Fan defective	► Check fan, if necessary replace [ch. 9.12]

The following faults must only be rectified by qualified personnel:

Fault codes	Fault	Cause	Rectification
Flashing 4 times Flame simulation/ extraneous light	Flame signal prior to or after operation	Extraneous light source present	Extraneous light detection from 13 µA ► Find and eliminate ex- traneous light source
		Flame sensor defective	► Check flame sensor, if necessary replace
	Flame formation during pre- purge	Solenoid valve leaking	► Replace oil pump [ch. 9.13]
Flashing 7 times Flame failure during opera- tion	Flame has failed	Oil supply leaking	► Check oil supply
		Suction resistance in front of pump too high	
		Oil nozzle soiled	► Replace oil nozzle
	Flame signal insufficient	Burner setting incorrect	► Check burner setting ► Check flame signal [ch. 7.1.1]
		Flame sensor soiled	► Clean flame sensor
		Flame sensor defective	► Check flame sensor, if necessary replace
Flashing 8 times Release contact fault	Temperature switch does not close	Actuator defective	► Check actuator, replace if necessary
		Temperature switch defect- ive	► Check temperature switch and heat ex- changer, if necessary replace [ch. 9.9]
Flashing 10 times Combustion manager fault	Burner does not start	Heat exchanger defective	► Reset burner [ch. 10.1.2]
		Combustion manager de- fective	► Reset burner [ch. 10.1.2], if fault reoccurs replace combustion manager

10 Troubleshooting

10.1.3 Illuminated push button flashes

An irregularity is present. The burner does not go to lockout. Once the fault has been rectified, the error code ceases.

Error codes without lockout

The following faults must only be rectified by qualified personnel:

Fault codes	Cause	Rectification
Flashing green/red	Extraneous light prior to heat demand	► Find and eliminate extraneous light source
Flashing red/orange with pause	Excess voltage	► Check voltage supply
Flashing orange/red	Low voltage	► Check voltage supply
	Internal unit fuse (F7) faulty	► Replace fuse [ch. 9.16]
	Combustion manager fault	► Replace combustion manager
Flashing green	Flame sensor soiled	► Clean flame sensor
	Flame sensor defective	► Replace flame sensor
	Burner operation with weak flame signal (< 45 µA)	► Adjust burner whilst observing the recommended flame signal [ch. 7.1.1]
Glimmering red	OCI mode activated (not used)	► Press illuminated push button for more than 5 seconds ✓ Combustion manager changes to operating mode

10.2 Operating problems

The following faults must only be rectified by qualified personnel:

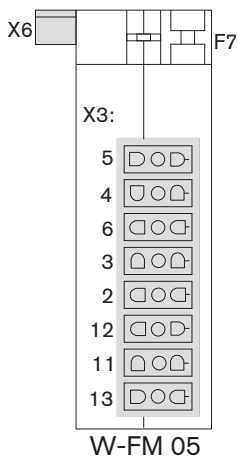
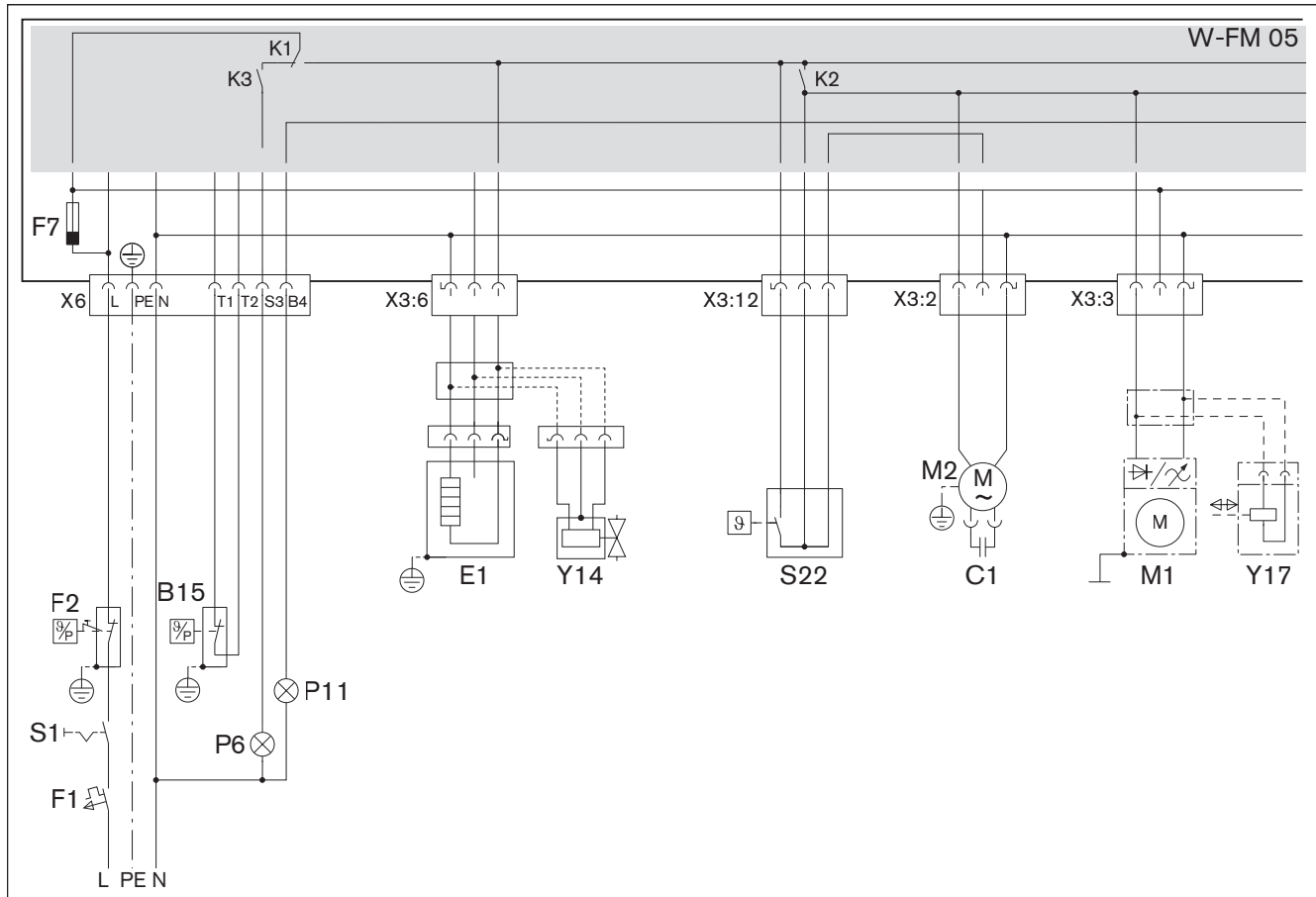
Observation	Cause	Rectification
Oil pump makes severe mechanical noise	Oil pump sucks air	► Ensure oil supply is tight
	Suction resistance in oil line too high	► Clean filter ► Check oil supply
Oil nozzle atomisation uneven	Nozzle blocked/soiled	► Replace nozzle [ch. 9.4]
	Nozzle worn	
Flame tube/air nozzle has heavy soot deposit	Oil nozzle defective	► Replace nozzle [ch. 9.4]
	Mixing head set incorrectly	► Set mixing head [ch. 9.10]
	Incorrect combustion air quantity	► Adjust burner
	Boiler room ventilated insufficient	► Ensure sufficient boiler room ventilation
	Wrong oil nozzle	► Check nozzle type
	Recirculation aperture too small	► Increase recirculation aperture [ch. 9.11]
Combustion pulsating or burner booming	Mixing head set incorrectly	► Set mixing head [ch. 9.10]
	Incorrect combustion air quantity	► Adjust burner
	Wrong oil nozzle	► Check nozzle type
CO content too high	Nozzle distance too big	► Check nozzle distance, adjust if necessary [ch. 9.10]
	Fan speed too low	► Increase fan speed
Stability problems	Nozzle distance incorrect	► Check nozzle distance, adjust if necessary [ch. 9.10]
	Recirculation aperture too big	► Reduce recirculation aperture [ch. 9.11].
	Fan speed too high	► Reduce fan speed
Burner pulsating at START	Combustion chamber resistance too high (e. g. condensing boiler)	► Check installation ► If necessary optimise start behaviour [ch. 9.17]
Flue gas noise emission too high	Unsuitable or no flue gas sound absorber installed	► Check or fit flue gas sound absorber

11 Technical documentation

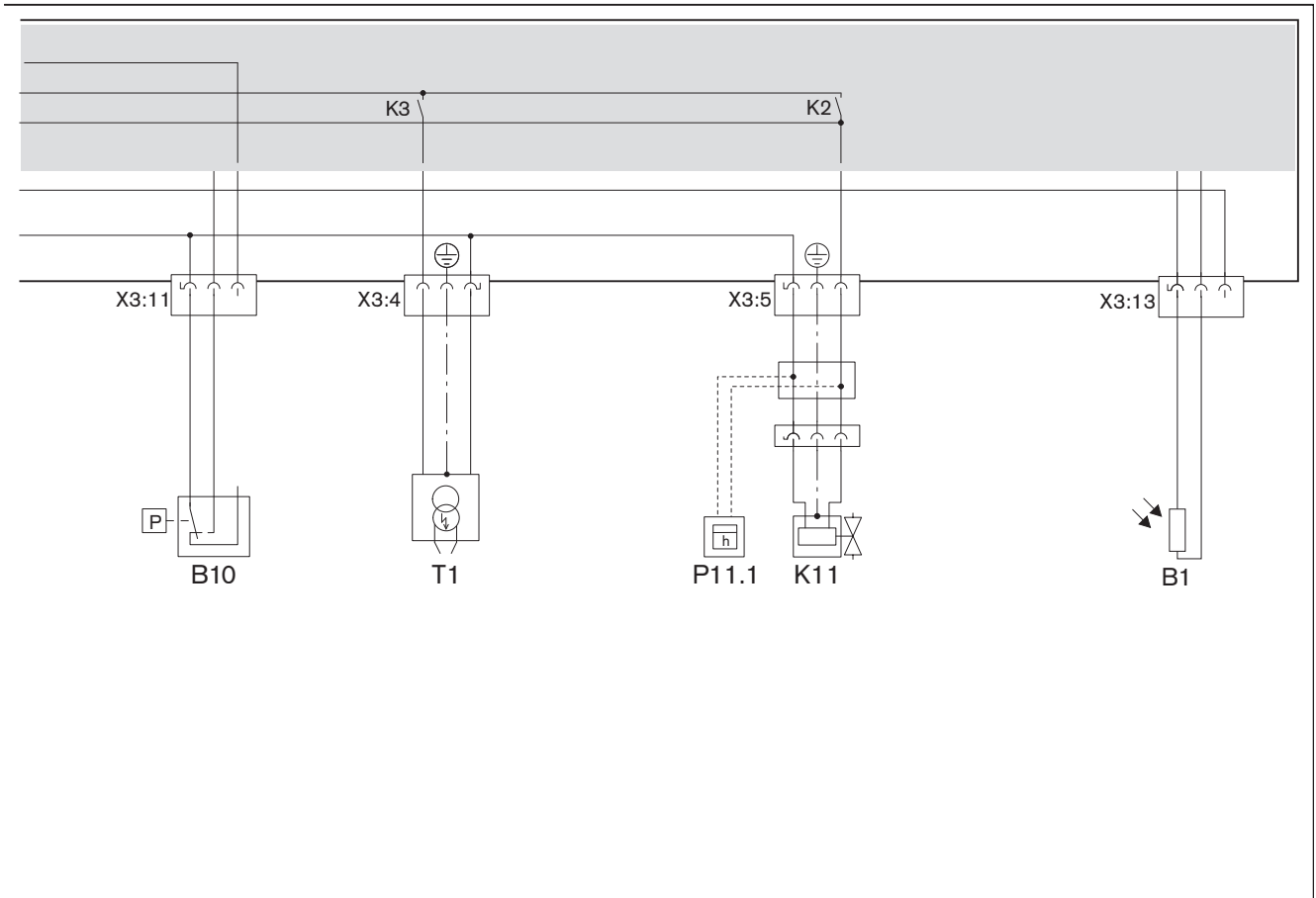
11 Technical documentation

11.1 Wiring diagram

For special version observe wiring diagram supplied.



- B15 Temperature or pressure regulator
- C1 Motor capacitor
- E1 Heat exchanger
- F2 Temperature or pressure limiter
- F7 Internal unit fuse (T6.3H, IEC 127-2/5)
- F1 External fuse
- K1 Solenoid valve
- M1 Fan
- M2 Pump motor
- P6 Control lamp operation (optional)
- P11 Control lamp lockout (optional)
- S1 Operating switch
- S22 Temperature switch
- Y14 Safety valve (optional)
- Y17 Air damper actuation (optional)



B1	Flame sensor
B10	Air pressure switch
P11.1	Hours counter (optional)
T1	Ignition unit
K11	Solenoid valve

11 Technical documentation

11.2 Conversion table unit of pressure

Bar	Pascal			
	Pa	hPa	kPa	MPa
0.1 mbar	10	0.1	0.01	0.00001
1 mbar	100	1	0.1	0.0001
10 mbar	1 000	10	1	0.001
100 mbar	10 000	100	10	0.01
1 bar	100 000	1 000	100	0.1
10 bar	1 000 000	10 000	1 000	1

12 Project planning

12.1 Oil supply

Observe EN 12514-2, DIN 4755, TRÖI and local regulations.

General information relating to the oil supply

- Do not use cathode protection system with steel tanks.
- With oil temperatures $< 5\text{ °C}$, the separation of paraffin can cause oil lines, oil filters and nozzles to become blocked. Avoid placing oil tanks and pipelines in areas subject to frost.
- The oil supply should be installed in such a way that the oil hoses can be connected free of tension.
- Fit oil filter in front of pump, recommended mesh aperture $70\text{ }\mu\text{m}$.

Suction resistance and supply pressure



CAUTION

Pump damage due to excessive suction resistance

A suction resistance greater than 0.4 bar can damage the pump.

- Reduce suction resistance – or – install oil supply pump or suction unit, whilst observing the maximum supply pressure at the oil filter.

The suction resistance depends on:

- suction line length and diameter,
- pressure loss of oil filter and other components,
- lowest oil level in the oil storage tank (max 3.5 m below the oil pump).

If an oil feeder pump is installed:

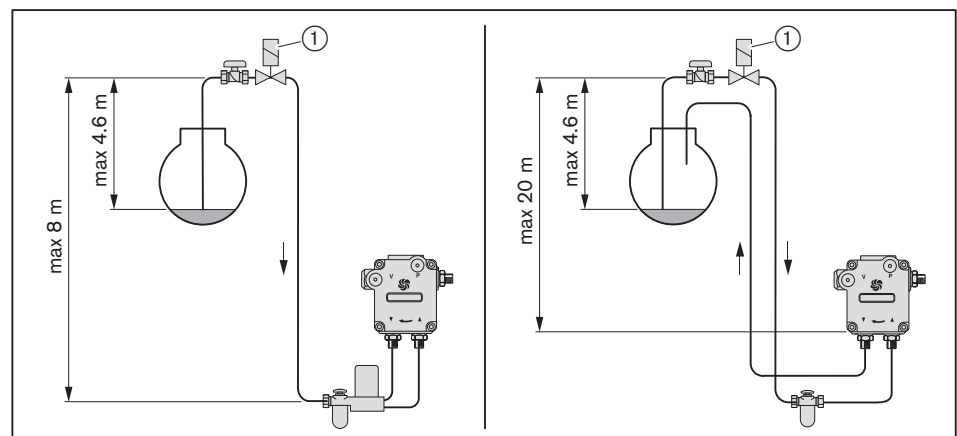
- max 1.5 bar supply pressure at oil filter,
- max 0.7 bar supply pressure into automatic de-aerator.

Elevated oil level

- If the suction line is leaking the tank can be siphoned dry. An electric anti siphon valve ① can prevent this.
- Observe manufacturers instructions regarding pressure loss caused by anti siphon valve.
- The anti siphon valve must close with a delay and show a pressure relief towards the oil storage tank.

Maintain height differences:

- max 4.6 m between oil level and anti siphon valve,
- on single pipe system max 8 m between anti siphon valve and automatic de-aerator,
- on two pipe system max 20 m between anti siphon valve and oil pump.



Single pipe system



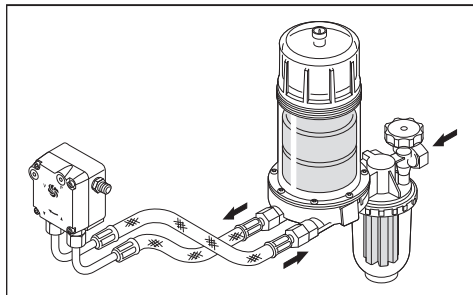
CAUTION

Damage to the oil pump caused by incorrect connection

Mixing up supply and return can damage the oil pump.

- Ensure correct connection of oil hoses to the supply and return of the pump.

If the oil is supplied via a single pipe system, and automatic de-aerator must be installed in front of the oil pump.



Two pipe system

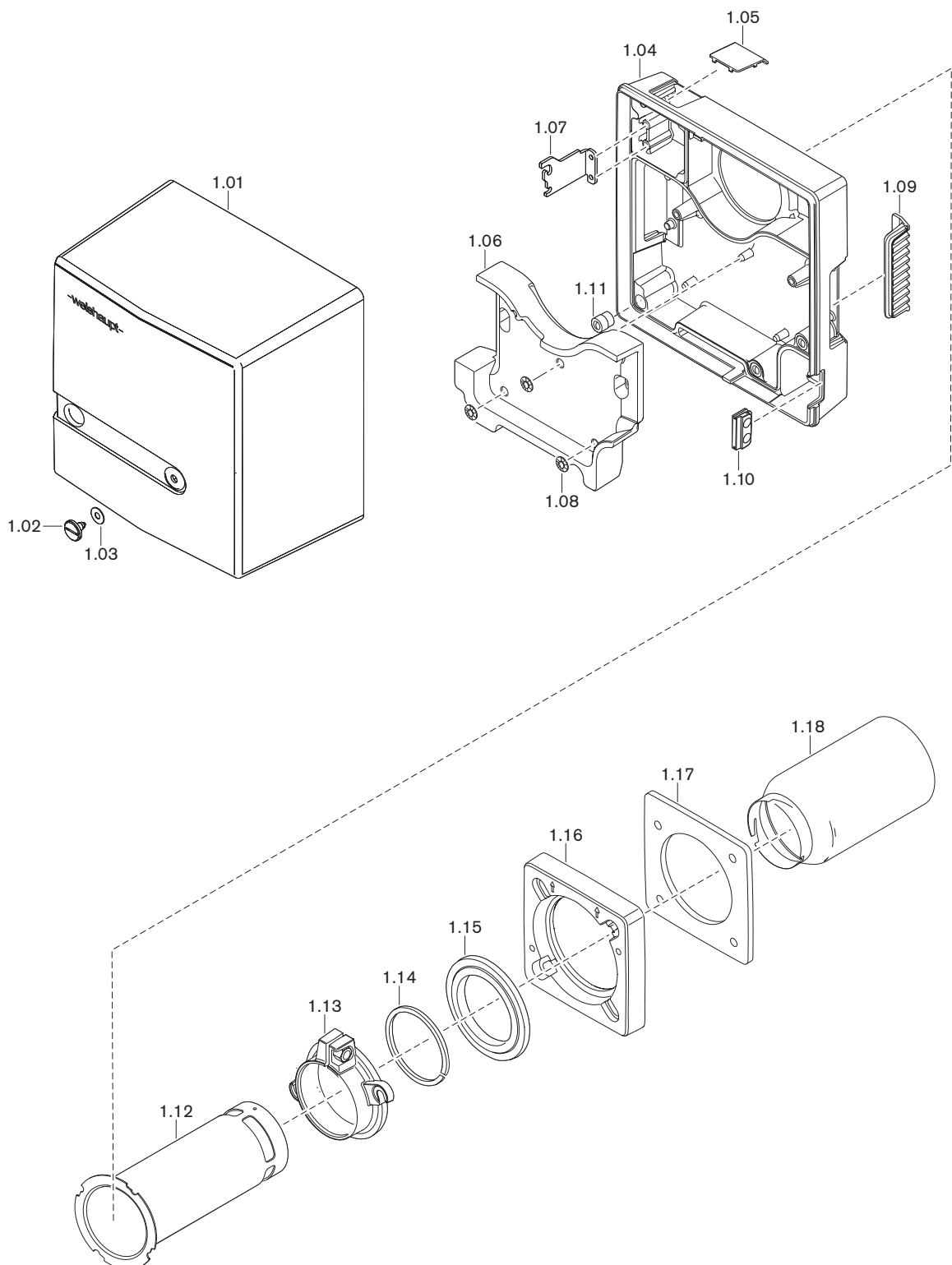
In a two pipe system the oil pump is vented automatically.

Ring main operation

Weishaupt recommends the use of a ring main when operating several burners.

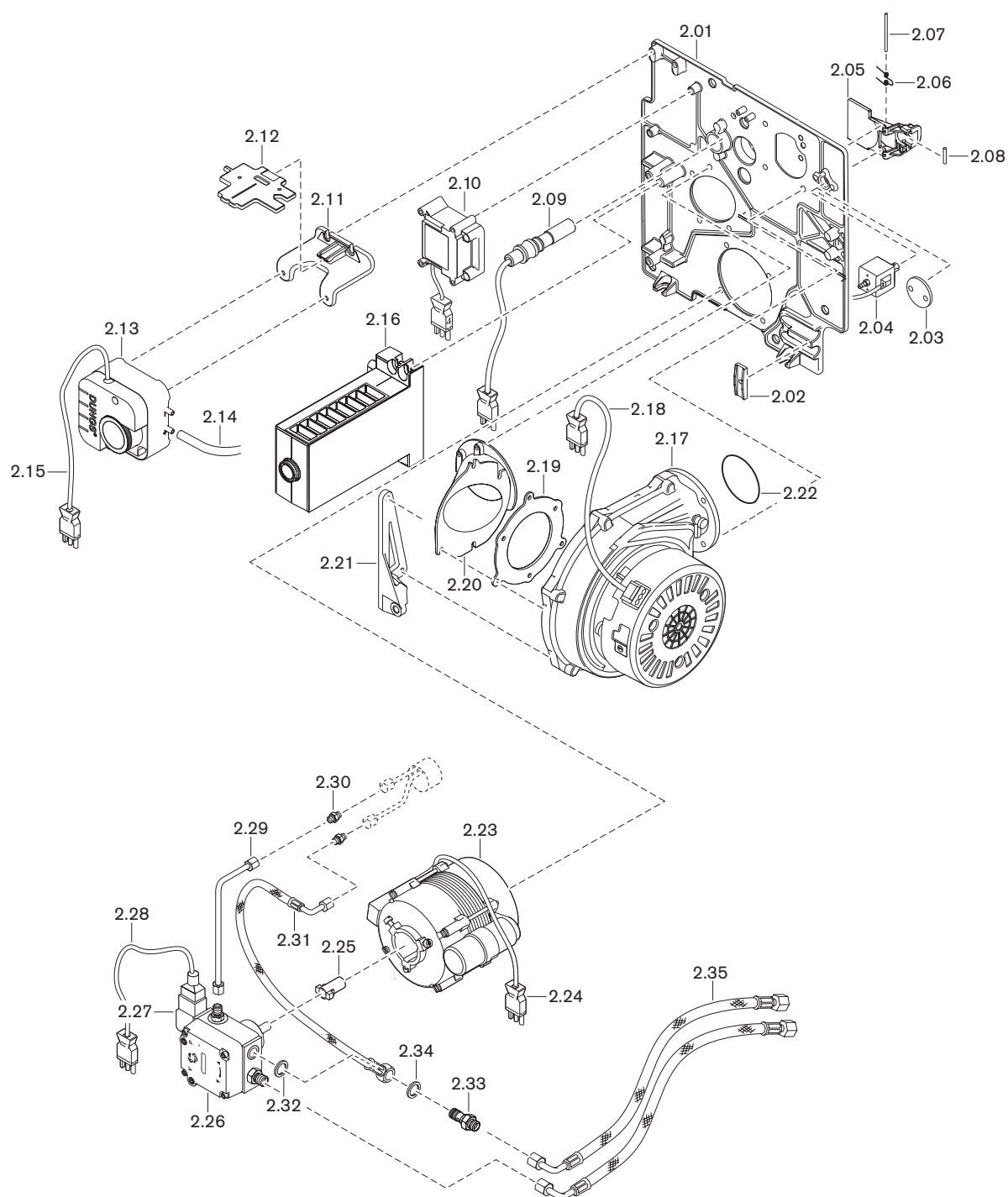
13 Spares

13 Spares



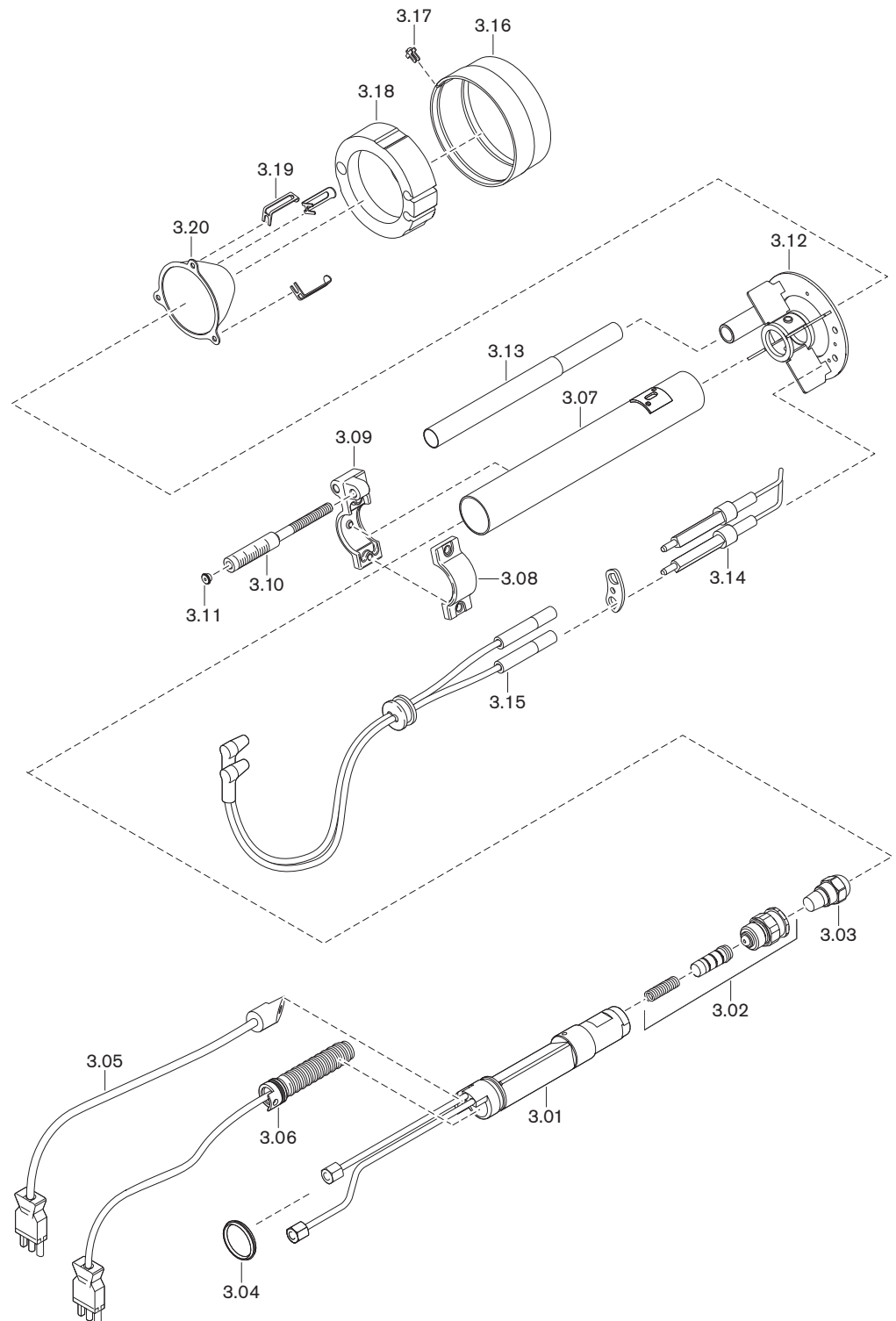
Pos.	Description	Order No.
1.01	Cover complete	245 050 01 092
1.02	Screw M8 x 15	142 013 01 157
1.03	Washer 7 + 0.2 x 18 x 0.6	430 016
1.04	Burner housing	245 050 01 012
1.05	View port glass	245 050 01 187
1.06	Lining	245 050 01 147
1.07	Bracket for service position	245 050 01 217
1.08	Spring nut	412 506
1.09	Cover burner housing	
	– without air inlet	245 050 01 127
	– with air inlet	245 050 01 137
1.10	Grommet	241 050 01 177
1.11	Press fitting for quick release fastener	499 310
1.12	Adapter pipe	
	– D80 (ME 1.xx)	245 050 14 427
	– D90 (ME 2.xx)	245 050 14 437
1.13	Sliding flange	
	– D80 (ME 1.xx)	245 050 01 247
	– D90 (ME 2.xx)	245 050 01 267
	– Screw M8 x 25 DIN 6921	409 269
	– Screw M8 x 25 DIN 921 8.8	402 500
	– Hexagonal nut DIN 934 -8	411 401
1.14	Gasket sliding flange	
	– D80	245 050 01 157
	– D90	245 050 01 167
1.15	Adapter ring	
	– D80	245 050 01 257
	– D90	245 050 01 277
1.16	Burner flange	245 050 01 237
1.17	Flange gasket	245 050 01 287
1.18	Flame tube H6	
	– MB 800 (ME 1.xx)	240 050 14 057
	– MB 900 (ME 2.xx)	240 050 14 077

13 Spares



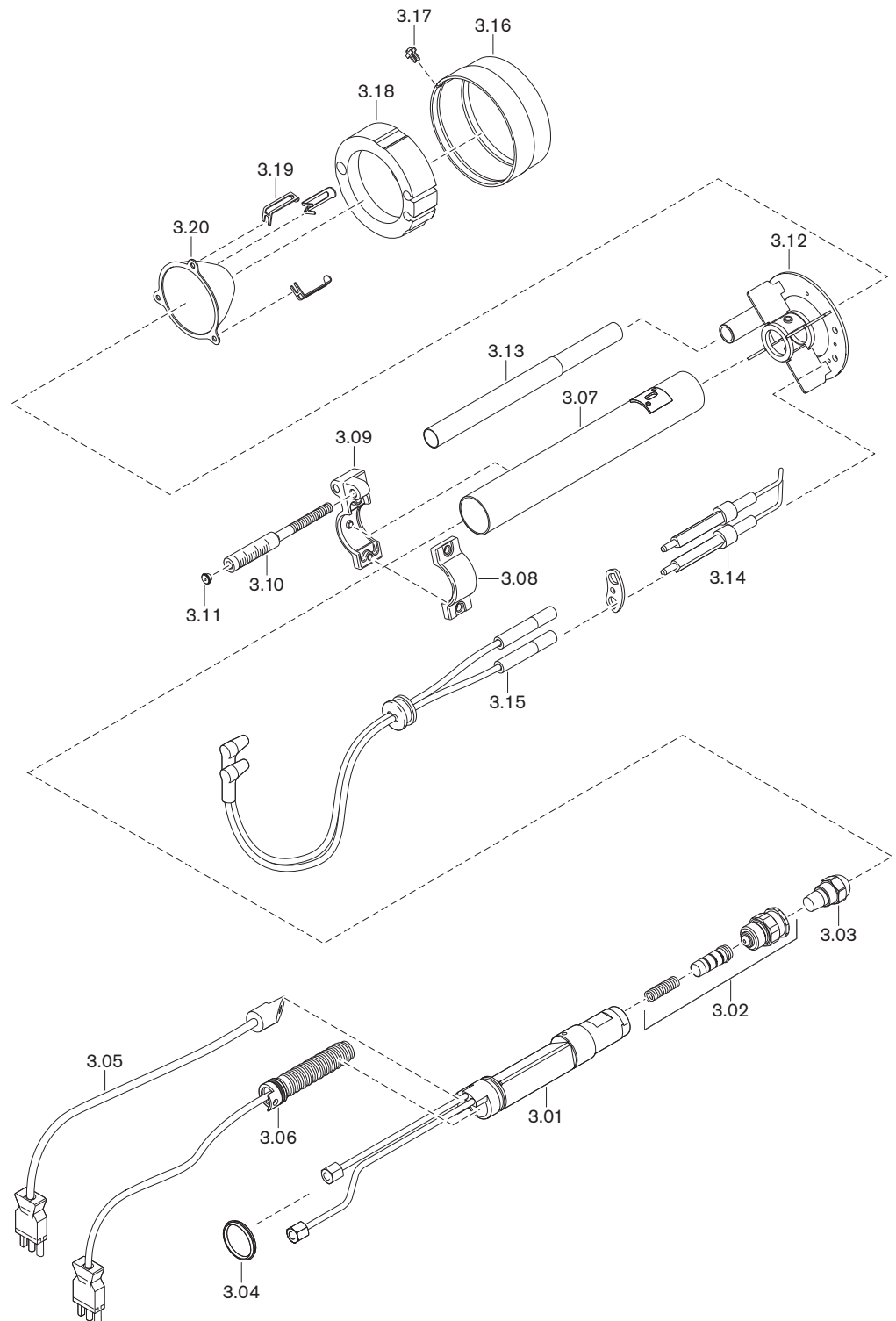
Pos.	Description	Order No.
2.01	Housing cover	245 050 01 032
	with quick release fastener cpl.	
	– Circlip for quick release fastener	499 311
	– Pin for quick release fastener	499 312
2.02	Bracket for oil hoses	241 400 01 367
2.03	Cover housing cover	245 050 02 057
2.04	Solenoid for air damper with plug cable	245 050 12 092
2.05	Air damper	245 050 02 017
2.06	Spring for air damper	245 050 02 047
2.07	Shaft for air damper	245 050 02 067
2.08	Cylindrical taper pin 3.0m 6x18mm DIN 7-A1	423 484
2.09	Flame sensor QRC1A	600 588
2.10	Ignition unit type W-ZG01 230V 50VA	603 219
2.11	Bracket for air pressure switch	245 050 24 037
2.12	Setting gauge WL5 purflam	245 050 00 027
2.13	Air pressure switch	691 447
2.14	Hose 4.0 x 1.75 120 mm	241 050 24 017
2.15	Plug cable No.11 air pressure switch	245 050 12 042
2.16	Combustion Manager W-FM 05	
	– 113 230V PB (TN = 2 s)	600 472
	– 114 230V PB for WTU (TN = 25 s)	600 474
2.17	Radial fan complete with EC motor	245 050 08 012
	with fixing bracket and O ring	
2.18	Plug cable No. 3 EC housing	245 050 12 022
2.19	Gasket intake connection/fan	245 050 01 107
2.20	Intake connection	245 050 01 047
2.21	Mounting bracket for cover	245 050 01 227
2.22	O ring 50 x 2.5 NBR70 ISO 3601	445 526
2.23	Motor ECK02/H-2P 230V 50Hz 75W	652 098
	- Capacitor 4.0 µF 420V, AC, DB	713 473
2.24	Plug cable No. 2 pump motor	245 050 12 082
2.25	Plug coupling	652 135
2.26	Pump ALEV 30C	601 857
	– Filter set with seal	601 107
2.27	Solenoid coil T80 Suntec 220-240V 50-60Hz	604 495
2.28	Plug cable No. 5 solenoid valve	245 050 12 032
2.29	Oil line flow	245 050 06 018
2.30	Screwed union 24-SX-LL04-ST	452 020
2.31	Pressure hose DN 4 284 mm (leakage oil)	
	– Standard	491 247
	– diffusion resistant	491 134
2.32	Sealing ring A10 x 14 x 4.0 DIN 7603 Cu	440 037
2.33	Swivel screw R1/8 M10 x 1	241 110 06 057
2.34	Sealing ring A10 x 14 x 1.5 DIN 7603 Cu	440 034
2.35	Oil hose DN 4, 1200 mm	
	– Standard	491 126
	– diffusion resistant	491 131

13 Spares



Pos.	Description	Order No.
3.01	Nozzle body with oil line	245 050 10 162
	– Ring 21.1 x 25.4 x 3.8	245 050 10 117
3.02	Nozzle shut off set	240 050 10 012
3.03	Nozzle	
	– 0.35 gph 80°SF Fluidics	602 747
	– 0.40 gph 80°SF Fluidics	602 748
	– 0.45 gph 80°SF Fluidics	602 749
	– 0.50 gph 80°SF Fluidics	602 750
	– 0.55 gph 80°SF Fluidics	602 751
	– 0.60 gph 80°SF Fluidics	602 752
	– 0.65 gph 80°SF Fluidics	602 753
	– 0.75 gph 80°SF Fluidics	602 754
	– 0.35 gph 80°SR Danfoss	602 136
	– 0.40 gph 80°SR Danfoss	602 130
	– 0.45 gph 80°SR Danfoss	602 131
	– 0.50 gph 80°SR Danfoss	602 132
	– 0.55 gph 80°SR Danfoss	602 133
	– 0.60 gph 80°SR Danfoss	602 134
	– 0.65 gph 80°SR Danfoss	602 135
	– 0.75 gph 80°SR Danfoss	602 137
3.04	Ring 21.1 x 25.4 x 3.8	245 050 10 117
3.05	Temperature switch	245 050 10 192
3.06	Heat exchanger	245 050 10 072
3.07	Guide tube	245 050 10 172
3.08	Adjusting lever top part	241 110 10 077
3.09	Adjusting lever bottom part	241 110 10 067
3.10	Indicating bolt M6 x 90	241 110 10 097
3.11	Plug 5.25	241 110 10 087
3.12	Centering screw	
	– D80 (ME 1.xx)	245 050 14 102
	– D90 (ME 2.xx)	245 050 14 302
3.13	Illuminating tube end piece	245 050 12 057
3.14	Ignition electrode set	
	– MB 800 (ME 1.xx)	245 050 14 447
	– MB 900 (ME 2.xx)	245 050 14 457
3.15	Ignition cable 380 mm	245 050 11 032
3.16	Metering ring	
	– MB 800 (ME 1.xx)	245 050 14 017
	– MB 900 (ME 2.xx)	245 050 14 207
3.17	Clip for metering ring	245 050 14 397
3.18	HTI refractory for air nozzle 2.24	245 050 14 407
3.19	Clip for insulation	245 050 14 417

13 Spares



Pos.	Description	Order No.
3.20	Air nozzle	
	– D19 MB 819 (ME 1.19)	245 050 14 022
	– D21 MB 821 (ME 1.21)	245 050 14 032
	– D22 MB 822 (ME 1.22)	245 050 14 042
	– D23 MB 823 (ME 1.23)	245 050 14 052
	– D24 MB 824 (ME 1.24)	245 050 14 062
	– D24 MB 924 (ME 2.24)	245 050 14 212
	– D25 MB 925 (ME 2.25)	245 050 14 342

14 Notes

14 Notes

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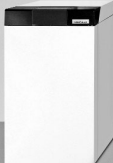
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	monarch® WM Burners and Industrial Burners up to 11,700 kW These legendary industrial burners are durable and versatile. Numerous variations of oil, gas and dual fuel burners meet a wide range of applications and capacity requirements.	Floor-standing condensing boilers for oil and gas up to 1,200 kW The floor-standing condensing boilers WTC-GB (up to 300 kW) and WTC-OB (up to 45 kW) are efficient, low in pollutants and versatile in use. Even the largest capacities can be covered by cascading up to four gas condensing boilers.	
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	MCR Technology / Building Automation from Neuberger From control panels to complete building management systems - at Weishaupt you can find the entire spectrum of modern control technology. Future orientated, economical and flexible.	Heat pumps up to 180 kW The heat pump range offers solutions for the utilisation of heat from the air, the soil or ground water. Some systems are also suitable for cooling buildings.	
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